

BEFORE THE SCIENTIFIC REVIEW PANEL
OF THE AIR RESOURCES BOARD
OF THE STATE OF CALIFORNIA

PUBLIC MEETING
IN THE MATTER OF
TOXIC AIR CONTAMINANTS

Tuesday, February 19, 1991
University of California, Irvine
National Academy of Sciences and Engineering
100 Academy Drive
Irvine, California

APPEARANCES

SCIENTIFIC REVIEW PANEL:

Chairman:	Dr. James Pitts
Panel Members	Dr. Charles Becker
	Dr. Craig Byus
	Dr. Gary Friedman
	Dr. John Froines
	Dr. Stan Glantz
	Dr. James Seiber
	Dr. Hanspeter Witschi

STAFF: Air Resources Board

William Lockett
Bruce Oulrey
Michelle Vale
Genevieve Shiroma
Kitty Howard
Joan Denton

Department of Health Services:

Dr. George Alexeeff
Dr. Lauren Zeiss

1 Air Resources Board

2 Scientific Review Panel

3 February 19, 1991

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5 - - P R O C E E D I N G S - -

6 CHAIRMAN PITTS: Good morning.

7 The first -- actually, an item that is not on
8 the agenda, excluding the coffee which was actually the
9 first item not on the agenda, this is now the second item
10 not on the agenda, is to welcome Professor Hanspeter
11 Witschi to our panel. He is a distinguished scientist
12 with a background that you panel members have copies of
13 his distinguished background, indeed. He is replacing
14 Dr. Dungworth, who is on sabbatical leave, a fate
15 devoutly to be desired during these days of budget cuts
16 and scrambles, and so forth, which is the way the world
17 -- at least the academic world -- goes, and as you know,
18 has resigned from the panel and as the result of that we
19 welcome HansPeter. I have interacted with him
20 professionally in some very interesting areas through the
21 years, as I am just an atmospheric chemist and he has
22 provided me a great deal of insight into some areas that
23 I am involved with and know very little about, and he has
24 done so very well indeed, and so we welcome you,
25 Hanspeter.

1 And, shortly you will find, after this
2 welcome, that you will receive a stack of material --
3 right? In fact, what you might receive, sooner or later,
4 is something like this. That is just nickel. That is
5 your nickel's worth there, and that is only half of it,
6 because the other half will be surely coming from Dr.
7 Glantz, who will point out and expand on the indoor
8 tobacco smoke's ETS aspects.

9 BOARD MEMBER WITSCHI: Of course.

10 CHAIRMAN PITTS: Of course.

11 Well, having said this, we are delighted to
12 have all of you here today. We have some interesting
13 topics on the agenda. This first will be the discussion
14 of the Department of Health Services' best estimates of
15 unit risk for SRP approved previously -- that's the ones
16 we've approved previously -- identified toxic air
17 contaminants.

18 And, Dr. Alexeeff, I believe, will be -- will
19 you be presenting that? Okay, you are on. We now call
20 him, not acting, but Chief of the Air Toxicology and
21 Epidemiology Section, and we want to congratulate you
22 officially for that promotion. We are delighted that
23 that came through.

24 DR. ALEXEEFF: So now I am, as Dr. Pitts
25 mentioned, Chief of the Air Toxicology and Epidemiology

1 Section. This is, essentially, the official title of the
2 acting position I've held since it was created in April
3 of last year, I guess is when the section was officially
4 created, and before that I was acting chief of a previous
5 section, which then changed names during our
6 reorganization. So, it is nice now to have things sort
7 of finalized for myself.

8 With me today is Dr. Lauren Zeiss, who is,
9 fortunately, still the acting Chief of Reproductive and
10 Cancer Assessment Section in the Department of Health
11 Services. And, this group is more commonly thought of as
12 the group that works on Proposition 65 implementation,
13 and they develop a lot of the risk assessments documents,
14 the risk assessment numbers. And in our discussions
15 about streamlining the process in our own toxic or
16 contaminant program we have often looked to her section
17 and the work that they have done in generating 40 or so
18 documents in a year, as it was required. So, Dr. Zeiss'
19 group has a lot of information for us to offer. They
20 have also been very willing to take the lead on a lot of
21 specific issues, as some of the other items on the
22 agenda, as we will be discussing.

23 So, the first point has to do with these best
24 estimates, or best values that we are suggesting, and
25 under the -- and correct me, Lauren, if I make an error

1 -- but, in terms of my understanding, under Proposition
2 65, it is required to develop a single number that
3 represents significant risk, and from that there can be
4 some sort of action then taken under the restrictions of
5 the law.

6 And, in the process of developing the risk
7 assessment numbers, they first -- that is the section,
8 Proposition 65 section, first looked at our air
9 documents, and re-examined them to see what single value
10 should be chosen from these documents. And, they chose
11 the values that are listed on the memo that I sent to Dr.
12 Pitts. I had spoken with Genevieve Shiroma at the Air
13 Resources Board regarding these best values. We were
14 suggesting to implement them in our hot spots program in
15 our guideline document there, and Genevieve felt it was
16 important to let the panel know what the status of some
17 of these numbers are. Therefore, we have, in examining
18 the documents, numbers were chosen out of the range that
19 had previously been approved by the panel. These are not
20 new numbers. They just, in examining data, decided which
21 number was best supported by the existing data.

22 There are six or seven compounds mentioned.
23 One thing that I wanted to mention was dibenzofurans and
24 dioxins, to clarify that the panel had identified 16
25 isomers of dibenzofurans and dioxins with chlorines of

1 the 2378 position, accept for the octa compound. And,
2 the risk potency estimates actually refers TCDD, the
3 tetrachlorodibenzodioxin. But in the control of dioxins,
4 since they are generally admitted in this mixture of
5 dioxins, they are often treated as kind of a family, and
6 they are not treated equally.

7 The other, the non-TCDD members of the family
8 are considered to have less potency. And there are
9 various schemes that have been developed, one by the EPA,
10 one by the Department of Health Services, and one by this
11 international organization, on how to treat this mixture.
12 And in any case, this number here reflects TCDD, the 3.8×10 to the 1. But, it reflects the TCDD, and then you
13 would put into the formula that one would use for
14 evaluating the whole family of benzodioxins and
15 dibenzofurans.
16

17 The other ones, I think, are fairly self
18 explanatory.

19 CHAIRMAN PITTS: Any questions from the
20 panel? Stan? Dr. Glantz?

21 BOARD MEMBER GLANTZ: Could you just say a
22 word on why you picked the numbers you did? I mean,
23 sometimes, like benzene is sort of in the middle of the
24 range. Oh, let's see, carbon tet is sort of at the low
25 end of the range, and the dibenzofurans are at the upper

1 end of range, and when we look -- can you just say a
2 little bit on why you picked the numbers you picked?

3 DR. ALEXEEFF: Well, let's see if we can run
4 through it.

5 Do you recall specifically on benzene?

6 DR. ZEISS: On benzene, for example, there
7 were a number of studies that were available, and there
8 was also human epidemiology data. And, what we tried to
9 do was to pick out the value that we thought was the most
10 representative of the full set.

11 In the case of benzene, the range is slightly
12 to the high side. The value that we chose represented a
13 value from an animal study, but it wasn't consistent with
14 the human data because there were so many studies. As
15 you can see, the more studies you have, the higher
16 potency estimates you can get if you keep taking the
17 highest value from each study.

18 DR. ALEXEEFF: And then the highest value,
19 5.3, represents the tumor tenacity in the preputial
20 glands, which was of some discussion on this panel of
21 reproduction, if anyone recalls. So, that was one reason
22 not to choose the highest number in this case, because
23 there have been various discussions that that was not
24 represented, that that tumor site was not representative.

25 BOARD MEMBER FROINES: What was the .75? I

1 forget these numbers.

2 DR. ALEXEEFF: I believe the .75 is the
3 maximum likelihood estimate of the human data, of one of
4 the human studies -- or I think of the three major epi
5 studies, that is the maximum high estimate of the lowest
6 study, I believe, that was approved for the range.

7 BOARD MEMBER FROINES: So, it looks to me
8 like this is the upper 95 percent confidence limit on the
9 NPG study?

10 DR. ALEXEEFF: Right, and it would be very
11 close, the upper 95 percent confidence interval on the
12 human study, as well.

13 BOARD MEMBER FROINES: Rinsky.

14 DR. ALEXEEFF: Right, the Rinsky Study,
15 exactly.

16 And, then cadmium --

17 BOARD MEMBER FROINES: Do you need to --

18 DR. ALEXEEFF: -- yes.

19 BOARD MEMBER FROINES: -- I'm sorry -- do you
20 need to prepare a list of reasons for selecting this
21 particular number?

22 DR. ALEXEEFF: Yeah, for each one of these
23 chemicals a document was prepared, and if the panel
24 likes, we would be happy to forward to you copies of the
25 documents. They are not very long.

1 DR. ZEISS: They are relatively short. Some
2 of them were a three-page memo that goes through the
3 rationale for choosing one particular study over another,
4 or taking a geometric means in some cases.

5 DR. ALEXEEFF: So, if the panel would like, I
6 would be happy to send copies.

7 BOARD MEMBER FROINES: Just so we -- from my
8 standpoint, at least we would know that that statement
9 would be easily available.

10 DR. ALEXEEFF: Yes, it is easily available,
11 and these ranges and numbers were presented to the
12 Scientific Advisory Panel, Proposition 65. They don't
13 have the same -- they don't exert the same sort of
14 authority as this panel does, in the sense of working on
15 the risk assessments. They are more involved in the
16 listing of agents. But, in any case, they did discuss it
17 and essentially did not reject the documents.

18 Shall I move on to cadmium?

19 Do you recall the cadmium?

20 DR. ZEISS: For any particular one, I would
21 like to review --

22 DR. ALEXEEFF: Yeah, I think we would
23 probably have to, for the other ones --

24 DR. ZEISS: I could give a sense of some of
25 them --

1 DR. ALEXEEFF: Yeah, I think the -- yeah, to
2 exactly explain the study, I think we would have to -- we
3 would like to rather further review, because we didn't
4 bring the documents here. We just thought this would be
5 kind of an informational sort of thing.

6 BOARD MEMBER GLANTZ: I don't want to take an
7 excessive amount of time. I just was curious.

8 BOARD MEMBER FROINES: Actually, I would like
9 to see those, just for my own amusement.

10 DR. ALEXEEFF: But, there were no new studies
11 at the time for any of these. It is simply based upon
12 the studies the panel had already reviewed.

13 CHAIRMAN PITTS: John, so why don't you
14 interact with them directly, then --

15 BOARD MEMBER FROINES: Yes, I'll interact
16 directly.

17 CHAIRMAN PITTS: -- and you might also then,
18 after you do that, give us a little feeling for this, as
19 members of the panel we are interested.

20 BOARD MEMBER FROINES: Are you, Lauren, are
21 one or both of you redoing the risk assessment for
22 reproductive effects for ethylene oxide?

23 DR. ALEXEEFF: Our group is not.

24 Is your group looking at this?

25 DR. ZEISS: We haven't been requested to do

1 so.

2 That number was actually not recommended by
3 the Department of Health Services. It was a number that
4 was adopted by the Health and Welfare Agency, with formal
5 input from some group other than the Department of Health
6 Services. I don't exactly know how they arrived at that
7 estimate.

8 BOARD MEMBER FROINES: Well, George knows
9 what I am referring to.

10 In our document, ethylene oxide is treated as
11 a traditional noncarcinogen, from the standpoint of
12 reproductive effects, and there is an assumption made
13 that there are none at the dose levels that might be
14 encountered in the environment. And, I think that that
15 may or may not be correct, depending upon which risk
16 assessment model you feel is necessary to use, since
17 there are clearly dominant lethal effects, and so on and
18 so forth.

19 And, so at some point somebody -- since our
20 document is wrong in respect to that finding, somebody
21 ought to take a look at it at some point; although, I
22 don't think it is a high priority. The reason that I ask
23 is that in Los Angeles there are seven or eight cases
24 brought by the Attorney General on ethylene oxide as a
25 toxic air contaminant under Prop. 65.

1 DR. ALEXEEFF: It is a little bit hard to
2 explain, but the agency, the Health and Welfare Agency,
3 has sort of taken the role as the risk manager for
4 Proposition 65; whereas the department acts as the risk
5 assessment organization. So, there is a little
6 separation, in terms of how the workings for Proposition
7 65 work, between the agency and the department, and
8 consequently, if that is a specific concern of yours, I
9 think there are probably two best approaches to bring it
10 to the attention of the agency, as to say that our
11 bringing it to their attention is not met with open arms,
12 let's say. And, that either contacting another member of
13 that panel, the Scientific Advisory Panel, which we could
14 give their names and phone numbers for, or to contact Dr.
15 Steven Book, who is the lead for the -- let's say for the
16 agency in this case, for you to contact Dr. Steven Book
17 directly, and ask that it be put on their agenda for
18 discussion. And, I think that that would be the most
19 likely course for some action to be taken.

20 I don't know if you have a suggestion, but it
21 should be suggested work for your program.

22 DR. ZEISS: Yes, and I think that is a good
23 idea, to formally request for Proposition 65 purposes,
24 that which you are most concerned about, that it be
25 reviewed, from Steven Book, who is the executive

1 secretary to the Science Advisory Panel. I think a formal
2 request to him would help.

3 BOARD MEMBER FROINES: Well, I don't know
4 anything about the Prop. 65 numbers, so I don't know
5 whether it is good, bad, or indifferent. And, in that
6 regard, I don't know the basis for the number; but, I do
7 know that EPA, for example, has done a new risk
8 assessment based on heritable translocations, and that
9 those numbers turn out to be quite different relative to
10 our document that says there are no reproductive effects
11 at ambient concentrations. And there may not be, but I
12 think at some point we need to resolve those differences
13 between a linear model and a threshold model, and a
14 perception of the mechanism of ethylene oxide's
15 reproductive effects.

16 DR. ALEXEEFF: As you recall, for Proposition
17 65, when that initiative was adopted, one of the
18 statements in the initiative is that a chemical that is
19 found to cause reproductive harm, the NOEL will be
20 determined, and then the safe level will be based upon
21 1000th of the NOEL, something of that nature. And, the
22 NOEL -- at least as stated in the air document 10 parts
23 per million -- I think it should be 10 or maybe 20, or
24 something of that nature. So, 1000th of that would be
25 the safe level, if I think, in terms of the agency's role

1 in Proposition 65, they have generally tried to determine
2 what levels below which there would be no significant
3 harm. So, if you felt that 1,000th of the NOEL still
4 posed protentially reproductive harm, then that would be
5 an excellent reason to bring it back for discussion.

6 I don't recall what the levels were for that
7 translocation. I think that would probably be the
8 approach the agency has taken, that they wouldn't
9 re-evaluate it if the safe level was higher constricted
10 by the legislative in the initiative that requires the
11 1000-fold value.

12 BOARD MEMBER FROINES: I don't want to
13 prolong this. I just want to say that in this -- my
14 point is you just really emphasized my point. My point is
15 to use the NOEL and to divide by the safety factor for a
16 genetically active compound is inappropriate. So, it is
17 well on its face, and so the question is how to deal with
18 it, and under those circumstances? And, I think we
19 should talk about it outside.

20 DR. ALEXEEFF: Okay.

21 DR. ZEISS: Because one possibility is to do
22 some other kind of modeling.

23 BOARD MEMBER FROINES: That is what I think
24 should be done.

25 DR. ZEISS: And, I think EPA has actually

1 done some of that.

2 CHAIRMAN PITTS: Could I ask you just -- it
3 raises an interesting point, though.

4 John, you were concerned on two counts? A,
5 from the unit risk side; and B, in terms the actual
6 exposure side. Did that get involved with your concern?
7 Because I am concerned about recent evidence of very high
8 levels and hot spots of ethylene oxide in L. A.

9 BOARD MEMBER FROINES: Well, that is the
10 whole issue, because you have to factor in the -- if you
11 are going to look at the sperm effects, for example,
12 common lethal effects, then you have to look within,
13 presumably, in the sperm cycle, and so then the ambient
14 concentrations and hot spots becomes an important issue
15 in the context of the risk assessment you do. So, that,
16 somebody has got to go through the numbers, and it may
17 turn out that the carcinogen unit risk value is the
18 appropriate risk value, and we should all go home and
19 acknowledge that this was a useful exercise but didn't
20 show us anything.

21 But, I think somebody has to go through that
22 exercise because it is coming up in Southern California
23 all the time now, and once people start looking at
24 hospitals, it may come up even more.

25 CHAIRMAN PITTS: How do you suggest we follow

1 through on this in some informal, perhaps, informal -
2 formal way, in such a way that there will be a follow
3 through that we can sort of address this?

4 DR. ALEXEEFF: We would be happy to meet with
5 them.

6 CHAIRMAN PITTS: Would you? Yes, and I think
7 it would be worth to report back to the panel here,
8 because it is a very important question in terms of -- as
9 you well know, George, we have been asking: What happens
10 when we have made a decision on the panel? The DHS and
11 the ARB have produced the documents, we have approved
12 them, they have gone up the line, they are under
13 controls, and then something new arises. What sort of
14 mechanism do we take in, short of addressing those? And
15 so this is a good example of where we need to move ahead,
16 and I think it would be fine.

17 BOARD MEMBER FROINES: It is instructive for
18 us, as a panel, not to get into a knee-jerk reaction on
19 noncarcinogen effects, that we have to be sure we think
20 about them, because we all tend to say that none of this
21 is important and let's get over to cancer, which is
22 important, and the danger there is that we miss some
23 important issues.

24 CHAIRMAN PITTS: Fine, we will go ahead then
25 and presume that we will develop this issue, and that was

1 an interesting observation and interaction across the
2 spectrum here, and then come back and give us some input
3 to that approach.

4 DR. ALEXEEFF: Okay.

5 CHAIRMAN PITTS: Any other questions on this?

6 [No Response.]

7 Or any of the other compounds?

8 [No Response.]

9 Let me just make one comment that may come
10 out later. In Science -- this Science, the week of
11 -- let's see, there has got to be a week on this thing
12 some where, anyhow -- it is the 8th of February. There
13 are a couple of things in there on science, that turn out
14 to be very interesting and relevant to this discussion,
15 and one of them is a continuation of the discussion of
16 the carcinogens and human health in the perspective of
17 the EPA, and their risk assessment approach, and then
18 countering that, the discussions by Bruce Ames and his
19 colleague. So, I copied this latest thing, and we have
20 copies for the panel on that.

21 Also, however, which I carefully copied this
22 morning at something like 7:00 a.m. on my little copier
23 at home, and then I think I forgot. I think that it is
24 sitting somewhere on my desk, which is understandably you
25 forget it, because it is piled high. There is, however,

1 a very interesting discussion on dioxin revisited, and I
2 would commend every one -- the whole question of linear
3 extrapolation, to zero dose, the question of if dioxin
4 requires a binding, and a reversible binding, and all
5 this sort of thing that I virtually know nothing about as
6 a simple chemist. But, they present a very different
7 type of curve for dioxin, which sort of, instead of going
8 like that, it sort of goes like the old hockey stick, and
9 I think you might even say is a Calgary stick or the
10 Kings, at this stage of the game. It is a real stick,
11 very interesting in this article. They really don't --
12 this group is apparently of individuals who got together
13 and looked at this whole question and decided that there
14 really wasn't a linear situation with dioxins, and that
15 it has some implications. One of which is the low levels
16 and seem to not be a problem, but the high levels are
17 more of a problem than one would predict.

18 In other words, it goes along and looks like
19 -- in any case, it is all part of the continuing
20 discussion of this, and so I am sorry, because I don't
21 seem to have it here. It may still be somewhere around,
22 but I will get that to you, and I think we ought to send
23 that to the panel also, because the number we have here
24 will be of considerable interest, in this respect.

25 Okay, round two, then, the discussion of

1 updating the DHS guidelines for chemical carcinogenesis
2 risk assessment.

3 Doctor, will you continue on this.

4 DR. ALEXEEFF: Well, Dr. Zeiss' group has
5 been willing to chair a reevaluation of the current
6 Department of Health Services guidelines for cancer risk
7 assessment, and they began this process -- actually, let
8 me just step back one step, with regard to Dr. Froines'
9 comment.

10 Dr. Zeiss' group has been involved in
11 developing reproductive guidelines as well, for
12 reproductive risk assessment, and currently the
13 guidelines for reproductive risk assessments are not as
14 clear or explicit. I mean, I am talking about nationally
15 and internationally, in comparison to the cancer risk
16 assessment guidelines. EPA has some draft guidelines out
17 there, and the Department of Health Services has also
18 been developing guidelines of the reproductive, and
19 perhaps at some point we can come back and discuss those.

20 So, in addition to that, the group has
21 recently undertaken reevaluation of the existing cancer
22 guidelines. And, I will just let Lauren kind of go
23 through the areas that we were looking at. We can just
24 kind of discuss any concerns you have with the
25 guidelines, based upon your experience as to how we have

1 sort of used them, and we can take those into account and
2 discuss how changes can be made, or improvements to the
3 guidelines can be made.

4 DR. ZEISS: Okay, the guidelines were
5 published in 1985, but they were begun in the early '80s,
6 and they provide the basic guidance for hazard
7 identification and risk assessment of carcinogens for
8 regulatory purposes.

9 So, the guidelines provide approaches for
10 making risk estimates, and then criteria for evaluating
11 animal cancer bioassay data. So, in the update we are
12 addressing several issues that have come up over the
13 years as needing to be addressed in the revision:

14 First of all, the current scheme used to
15 classify agents as carcinogens.

16 Then, the standard default used when you
17 don't have any better information on pharmacokinetics to
18 scale from one species to another.

19 The use of physiologic pharmacokinetic models
20 for route species and dose extrapolation.

21 Mathematical models to be used to extrapolate
22 from high doses to low doses.

23 And then, time dependent models, so that you
24 can extrapolate from one type of exposure scenario, like
25 the one that has been discussed as the high dose rate

1 exposure scenario, to something where you have low, long-
2 term exposure.

3 The biological basis for assuming that there
4 is no threshold for carcinogenesis.

5 And, default parameters that are used in
6 assessing exposure.

7 I can briefly go over some of the issues that
8 are coming up under each major category if you would like
9 at this point.

10 DR. ALEXEEFF: It would probably be worth
11 while for her to, you know, go to each one of those major
12 groups and discuss them a little bit, and then if there
13 are any questions about that particular area we can deal
14 with it.

15 CHAIRMAN PITTS: We would appreciate that,
16 Thank you.

17 DR. ZEISS: Sure, okay.

18 So, for a carcinogen identification,
19 questions like: under what circumstances should a single
20 positive animal bioassay be sufficient for identifying an
21 agent as a carcinogen? If you have limited evidence of
22 carcinogenicity in a human, is that sufficient to treat
23 an agent as a carcinogen for regulatory purposes? If an
24 agent is metabolized by mammals to a known carcinogen, if
25 only the metabolite has been tested, and you don't have

1 any information on whether or not the parent compound is
2 active by direct bioassay, should you also treat the
3 parent as a carcinogen?

4 With regard to default assumptions for
5 interspecies scaling: Is the current surface area scaling
6 assumption, is that still appropriate? Other assumptions
7 under consideration are scaling to --

8 DR. ALEXEEFF: Why don't we stop right there
9 on that first part, cancer identification?

10 DR. ZEISS: Okay.

11 DR. ALEXEEFF: So, one of the first questions
12 that the group is looking at is: are there ways that we
13 should be changing the way we identify something as a
14 carcinogen? And, you know, she mentioned two examples of
15 things that we might look at. That is kind of one line
16 of investigation that we are undergoing in the
17 department.

18 Currently, we follow EPA and IARC guidelines,
19 which are fairly similar, in terms of requiring two
20 studies for -- usually there are -- I don't know how
21 studies there are required to identify something as a
22 human carcinogen. Sometimes it is one strong study.
23 But, usually, it requires many studies. And, so, we are
24 looking at that first question.

25 So, is there any discussion about

1 identification that anybody has?

2 BOARD MEMBER SEIBER: I just had a question,
3 George.

4 Does that mean that these are proposed
5 guidelines that are in the process of being fine tuned
6 now? So, that you are actively looking for suggestions,
7 or are you explaining to us something that is pretty well
8 set?

9 DR. ALEXEEFF: Well, we have guidelines that
10 were adopted in '85. We are in the process now of trying
11 to revise them.

12 What our thought is, is that the basic
13 guidelines, like on what is a good animal study, you
14 know, that kind. Like how many animals should there be
15 in a group for a study? I mean, basic information is the
16 same. Our plan is to update the document where it is
17 clearly needed. For example, lists, as of 1985, all the
18 known human carcinogens. Well, since then there has been
19 a few added. Update that list. That is a clear change.

20 And, then there are other areas, for example,
21 pharmacokinetics -- which Lauren will mention in a couple
22 of minutes -- where it states, something to the effect of
23 when information is available on pharmacokinetics every
24 effort should be made to use it, or something to that
25 effect. And, that is almost it. That is the guidance.

1 And, now our thought is, now that there are a lot of
2 models out there, there have been a lot of studies. We
3 have already used pharmacokinetics in a lot of our
4 analyses. We can now give more explicit guidance on how
5 to use it, when to use it, and then therefore that
6 section of the guidelines would be rewritten. We don't
7 expect to come out with a draft for a year or so, so we
8 are --

9 DR. ZEISS: Right, and we might have certain
10 sections that are ready for internal review by
11 mid-summer, but I think anything for external review
12 should be, perhaps, at the beginning of '92.

13 DR. ALEXEEFF: Right, and then once we come
14 out with some internal review, then there will be
15 extensive external discussion. But, this is an
16 opportunity -- and that is not just this particular
17 meeting -- but time for you to contact us, and just let
18 us know what your concerns are about the existing
19 guidelines. And, we can then let you know if we are
20 examining that issue, or we can examine it in our
21 internal working groups.

22 So, we will come out with some proposed
23 changes, but we will have to do it sort of internally,
24 otherwise we won't get anywhere. We will have to come up
25 with, at least, some sort of a straw horse, or whatever,

1 a straw man, that people can at least work on, and then
2 there will be some improvements on that.

3 DR. ZEISS: Okay, I will go on.

4 Under interspecies scaling, just the current
5 default assumption. If you don't have good information on
6 a cross-species pharmacokinetics, or pharmacodynamics, we
7 assume that dose per body weight to the two-thirds power,
8 or dose per surface area, if the same dose is given in
9 those units in two different species it produces the same
10 effect. So, we are reevaluating that assumption. There
11 has been a lot of discussion.

12 Other things that have been proposed are:
13 scaling to the three-quarters power; scaling simply on
14 the basis of body weight; or using the cumulative dose
15 which would make the potencies we now have look like
16 under estimates.

17 Regarding physiologically based
18 pharmacokinetics models, I guess there have been several
19 chemicals for which pharmacokinetics have been taken into
20 account under the air program. The same is the case
21 under Proposition 65. And, a key concern in using these
22 models is the uncertainty, both in terms of the structure
23 of the model, as well as the parameter estimates that you
24 put into the model. So, the question is, how can we more
25 formally take into account that uncertainty -- or, should

1 we be? So, that when we produce what we are calling an
2 upper bound estimate, it is in fact an upper bound
3 estimate. It does incorporate a lot of that uncertainty.
4 Would a good technique for doing this be something like a
5 Monte Carlo analysis?

6 An additional issue is what criteria should
7 we apply to be assured that when we are attempting to use
8 pharmacokinetic data to scale across species, whether or
9 not the data is, in fact, adequate for doing this.

10 Perhaps you would like to discuss the
11 physiologic and interspecies scaling issues? Is there
12 any input that you would like to give at this point for
13 those?

14 BOARD MEMBER FROINES: Well, I would just
15 make one comment, since the issue has come up in -- as
16 George and I both remember -- methylene chloride, and it
17 is about to come up again on perchloroethylene and it
18 will undoubtedly come up in the future.

19 To me, in some ways, the issue is not so much
20 whether the models are -- the models themselves -- the
21 physiologically based models, to me, are not the issue.
22 The real question comes and is to the adequacy of the
23 data on metabolism that from which the models derive
24 their input parameters. And, so, the emphasis in my view,
25 should be on gathering strong data that looks at

1 nonlinearities in the dose response curve, and looks at
2 interspecies variability, and as you gather data in that
3 regard, then it seems to me that you have more confidence
4 in the models that you ultimately then develop and use.

5 And, so the problem has been that people have
6 worried at the policy level about the use of the models,
7 when to me it is a scientific issue. It relates to the
8 quality of the data on metabolism and other
9 pharmacokinetic parameters.

10 DR. ZEISS: Yes, and that is a very good
11 point, and we are looking at that.

12 And, in another area along those lines,
13 looking at the great variability across humans for some of
14 these parameters, and that is a very difficult thing to
15 do, because it is fairly scanty, and not analyzed
16 following the same protocols, so it is a very difficult,
17 but a very important issue.

18 BOARD MEMBER FROINES: That was a very
19 important issue with respect to the surface area
20 correction -- rather the issue of the scaling of
21 methylene chloride, because we were looking at how seven
22 human livers -- or eight human livers, or whatever it was
23 -- handled methylene chloride, drawing rather significant
24 conclusions, based on the extremely limited data --

25 COURT REPORTER: I'm sorry, but I can't hear

1 you.

2 BOARD MEMBER FROINES: -- I'm sorry. Drawing
3 important conclusions with limited data on human
4 variability.

5 DR. ALEXEEFF: And, that will be human
6 variability, and lack of human information is going to be
7 a major point for a number of the chemicals that are
8 coming up. As you all know, perchloroethylene will be
9 one.

10 And another question comes into it with
11 regards to the choice of models. For example, I think it
12 was perchloroethylene, there are six different models
13 that have been proposed. So, the model development area
14 is kind of a very strong area of research, and both by
15 regulatory agencies, industries, and academia, and as a
16 result we may end up having many types of approaches to
17 these models, and there has to be some sort of discussion
18 as to is one model better than another model? Or, what
19 are the components of a model that are important?

20 BOARD MEMBER FROINES: Well, we are going to
21 have to use Monte Carlo simulation techniques to look at
22 uncertainties in the risk values. We have just done that
23 on -- which we'll send to you -- on some water data in
24 which we have done a lot of Monte Carlo simulation. I
25 think it is actually useful. It certainly takes up a lot

1 of computer time, though, but it is useful.

2 DR. ZEISS: Yes, but it is fairly
3 straightforward to do, and very helpful in getting an
4 idea of what the uncertainty is in the output of the
5 models.

6 BOARD MEMBER BYUS: I feel a concern, too,
7 about how this scaling between species, and the surface
8 area corrections, and the two-thirds, and three-quarter
9 powers, relate to the pharmacokinetic models. It is not
10 always clear to me that it is pharmacodynamic correction
11 factors versus pharmacokinetics.

12 So how, you know, it has been unclear in a
13 couple of documents what the -- how that relationship
14 exists. I know there is some more research being done on
15 that. So, in other words, if you do pharmacokinetics in
16 some compounds, do you then have to add on this other
17 correction factor of about ten? I mean, sometimes, if
18 you should, if it is a pharmacodynamic correction,
19 because certain species may be more sensitive to it,
20 because their proliferated tissues are proliferating
21 more, for example, versus even the smaller animals having
22 greater growth fraction in a variety of tissues, as
23 opposed to the bigger animals. That is probably a
24 pharmacodynamic correction.

25 And, if it really relates to

1 pharmacokenetics, then you don't necessarily need to do
2 it, I mean, need to divide or multiply by this other
3 factor.

4 DR. ALEXEEFF: That is an excellent point,
5 and I think Dr. Froines' and Dr. Becker's discussions on
6 methylene chloride, when we had them, were very helpful
7 to us in bringing out what are the points of discussion
8 of concern?

9 And, we will be working on these guidelines
10 for probably two years, or so, and as some documents come
11 forward to the panel, that deal with pharmacokenetics,
12 maybe you can think of it not only in terms of the
13 specific issues, but the general impact as to how it
14 might act on the whole process, because we are grappling
15 with those issues. We have internal discussions about
16 what we should do, or should not do, with surface area
17 correction, pharmacokenetics, and I am sure that EPA has
18 the same problems, so that there is no clear answer.

19 And, one of the things that we are trying to
20 identify in this area is what information do we need to
21 come to a better conclusion, or to be more assured as to
22 what we should be doing? Which is the best approach?
23 What type of studies or investigations should we use?
24 What type of data do we need to get a hold of? Whether
25 it is existing data that we need to compile and analyze

1 as Dr. Froines was mentioning, or is it studies that need
2 to be conducted to generate some data?

3 DR. ZEISS: In the mathematical model, the
4 extrapolation model that we use to extrapolate from high
5 doses to low doses, let's say that pharmacokinetics have
6 been accounted for. You will still need to extrapolate
7 from the high dose down to low dose.

8 And, one of the issues is the current
9 linearized multi-staged polynomial, that form of the
10 mathematical model that we are using, is that still the
11 best model to use? Should we continue doing that? Or,
12 should we be doing something else?

13 With regard to parameter estimates, there is
14 a lot of discussion about the need for some measure of
15 central tendency, and in the past what has been used is
16 the maximum likelihood estimate. But, there are problems
17 with that estimate because it very unstable, so perhaps
18 there might be another estimate like the mean, or the
19 average, which is a very natural statistic to look at.
20 Perhaps when we think about a measure's central tendency
21 to contrast with the upper 95 percent confidence limit,
22 maybe we can think about the average, or some other
23 estimate.

24 Then there is the whole issue of looking at
25 the Moolgavkar model, and models which take into account

1 cell proliferation, and we do that formally by a model.
2 Is that the best way to do it, if we truly, in fact, have
3 something that we don't believe is genotoxic, that we
4 believe is operating by via a cell proliferation
5 mechanism? Or, should we be taking an uncertainty factor
6 approach? How many stages should we consider in thinking
7 about carcinogenesis? Should it vary for different tumor
8 types? And, then there is the whole issue of time,
9 taking into account time and life span in our analyses?
10 Cancer, we have assumed for regulatory purposes, that
11 cancer increases with the third power of age. We know,
12 in fact, that it goes up more steeply than that. When
13 you look at cancer risk versus age for cancers, other
14 than the childhood cancers, it increases very steeply,
15 and usually to about the fifth or the sixth power, and we
16 typically assume that it goes up with the third power for
17 regulatory purposes, which leads to underestimates. On
18 the other hand, if you assume a very high power you can
19 over estimate. What should we be doing about scaling
20 over time?

21 As we become, maybe moving a little bit away
22 from the linearized model in circumstances where we have
23 good information that something is operating by a very
24 non-linear mechanism, what should we do about our
25 exposure estimates? Should we take into account dose

1 rate much more carefully? I think as we try to become
2 more precise about the dose response relationships, we
3 are going to have to also be much more careful on the
4 exposure side, because peak effects can have very, very
5 strong effects, and this may well be the case with ETO.
6 So, in addition to the mathematical model examination, we
7 are coupling that with looking at exposure evaluations.

8 CHAIRMAN PITTS: Go ahead, do you have a
9 comment?

10 BOARD MEMBER GLANTZ: Well, one exercise, and
11 I don't remember which report it was that we went through,
12 but it was to try and grade -- I remember George, you did
13 this -- to try and grade quality of data from the
14 different elements in the --

15 DR. ALEXEEFF: Yes, and it was --

16 BOARD MEMBER GLANTZ: -- yes, okay, and also
17 to judge sensitivity of the model to quality of data, and
18 I found that a very useful exercise. I mean, this is
19 just another way of looking at what John looked at.

20 But, I would suggest that you build that
21 into the process, because, you know, the way the debate
22 often gets framed is that the officiondos of the
23 pharmacokinetic models talk as if they were totally
24 deterministic with very low uncertainty, as opposed to
25 these sort of wild-ass epidemiological dose based

1 extrapolations.

2 But, you know, when you sit down and really
3 look at how precisely you know the different elements of
4 the pharmacokinetic models, then end up, usually, just as
5 uncertain as the more dose based approaches, and I have
6 found it very useful to just try and first of all spell
7 out for a given compound: what are the assumptions of the
8 model? How much information do we have that the
9 assumptions are reasonable? How confident can we be
10 about the various parameters in the model? And, how
11 important are they?

12 I mean, there are, in any given complicated
13 model that you are dealing with, like these PB PK models,
14 there is usually only a couple of the numbers that really
15 matter a lot, and so when you are doing your Monte Carlo
16 simulations, one of the other things that I would include
17 is a sensitivity analysis of the various parameters in
18 the model, so that rather than worrying about getting
19 really good estimates for all of them, so that could try
20 and isolate what the important parameters are, and then
21 concentrate on those.

22 So, I think that is something that would
23 really help to enlighten, you know, the discussion. And,
24 I would hope, in the end, that the results from this sort
25 of gross dose analysis, and the PB PK models, would some

1 day converge and come up with similar kinds of results.
2 And, I think that if that were to happen, that could give
3 you a lot more confidence in both of them.

4 CHAIRMAN PITTS: Do you have something to
5 add?

6 BOARD MEMBER BECKER: I think it may be
7 helpful, in the sense that you define your -- before you
8 even have looked at it -- what your certainties are, and
9 what your lack of certainties are, and I think one of the
10 things that would certainly help me is what happens to
11 methylene chloride? I learned a lot through that
12 process, which was it was the quality of which data --
13 there needed to be a fudge factor, if you will, that was
14 put in that that took into account the science, that took
15 into account the uncertainty within that science. It
16 says this paper is really of more value than this paper,
17 and that would be defined in advance, as to what are the
18 criteria.

19 And, what you would have to do in advance
20 when you say: in order to be included in this data it has
21 got to meet these qualities, and of it doesn't, then it
22 doesn't because of this. And, then you could weigh that.
23 And, I learned that from the methylene chloride, how
24 valuable that is.

25 The other one that I think would be helpful,

1 and perhaps it will come up today when Genevieve talks,
2 but I learned from the question about the parathion
3 issues, that we don't often consider the most susceptible
4 population, which is really quite there if the
5 cholinesterase doesn't develop for the first six months.
6 I was quite surprised to learn that there weren't studies
7 that had actually looked at that, and that that whole
8 business about which population as a whole, either
9 animals or people, it wasn't looking at the most
10 susceptible versus the least susceptible, because that
11 would have an incredible factor that adds to the scaling
12 of it. If you take an infant that has no cholinesterase,
13 versus at six months normal cholinesterase, the risk
14 analysis would be completely different. And, then, if we
15 had insufficient data on the children, what do you do
16 with that? Well, if there was no data, you couldn't add
17 it. I learned a great deal from that about how we need
18 to have a factor for the most susceptible, at least to
19 understand it when we do a risk assessment, because that
20 would be a key factor in our scientific understanding.

21 And, I guess the final comment I would make
22 would be that if we have reason to understand, say with
23 the organo phosphates, we had a reason to understand the
24 mechanism there, we could be more precise if we didn't
25 understand the mechanism of cancer, for instance. So, we

1 need to scale right into it. We are choosing the most
2 susceptible, based upon a rational discussion of an
3 enzyme, which made a lot of sense. But, if we don't know
4 exactly what causes cancer in this way, we couldn't be as
5 precise about the importance of that number. Perhaps
6 those would be useful, at least for comments.

7 Parenthetically, I would also say that it
8 disturbs me a lot that we don't pay more attention to
9 whether it is a single heat exposure that it doesn't take
10 the life versus chronical level, and that is very
11 confusing to me, and I am sort of lost. And, I think, in
12 your deliberations over the next two years, you are going
13 to have to reach some factor that gets included in this
14 where single high dose non-lethal non -- obviously --
15 injurious has a factor. You are going to have to come to
16 grips with that in some way, because it has important
17 scientific and management kinds of issues.

18 BOARD MEMBER FROINES: This is a very, very
19 interesting issue, because, you know, Talbott Paige, who
20 is at Brown University, has sort of pioneered work in
21 looking at the value of information, various phasing
22 approaches to the use of information for decision making,
23 and yet clearly the most regulatory agencies avoid that
24 approach with a passion, because it makes everything so
25 much more complex.

1 But, it seems to me that those issues should
2 be considered at least as you go through this process and
3 make some kind of finding about how you view, sort of
4 more or less, the value of information, or phasing
5 approaches, or whatever, so -- the words that we have all
6 learned more about what they are, than what they mean,
7 sometimes, in the last few years.

8 DR. ZEISS: I guess one of the problems with
9 the facing approach regulators is that big subjective
10 component to it, and I think that some guidance from you
11 all on how to deal with that, and better define what we
12 mean by a particular uncertainty, or a subjective
13 estimate of that uncertainty. That would be very helpful
14 to us.

15 BOARD MEMBER BECKER: I think that could
16 easily, if you set that out in advance before you looked,
17 it would make some credibility, and the facing wouldn't
18 be quite as bad if you said, these are the factors that
19 go into it for this purpose, based upon that mechanistic
20 kind of decision making. That is really what a
21 physiological model is trying to do, in essence, I think.

22 DR. ZEISS: Right.

23 BOARD MEMBER BECKER: And, as we learn more
24 about molecular biology, as all of the sciences focus at
25 the cell, then they become much more discussable amongst

1 individuals, and at that level we are eventually going to
2 be talking about that kind of arena, where based upon
3 this, the probability is this. Bayesian notions about
4 predicting that aren't just kind of random events, they
5 are scientifically guided events.

6 CHAIRMAN PITTS: Are there other comments?

7 [No Response.]

8 If not, then I might want to make a couple
9 from the exposure point of view that we discussed.

10 I guess, what I am saying from the viewpoint
11 of models, the model exposure, I would have to agree with
12 everything Stan said about how you would approach them,
13 with the importance of understanding the validity of your
14 input data -- and, that Chuck has said here, also, in
15 terms of a high, low, the importance of acute exposures
16 and what that might mean in terms of health effects
17 versus long-term chronics, this whole question.

18 And, then the question again, as I was
19 indicating, on the dioxin case that is in this latest
20 Science it is very clearly an extremely important
21 point. In other subtillties too, for example, I think
22 just of interest, there is some information on ozone
23 damage that the Air Resources Board is citing, which I
24 think is very interesting in terms of regulatory
25 interest, that exposure, I guess at animals -- it might

1 even be humans, epidemiology -- but anyway, exposures at
2 one hour with .08. That is 80 parts per billion of
3 ozone. That is the old world health standard, 80 parts
4 per billion for one hour, that is the standard, and then
5 that standard was relaxed and went up to 120 ppb. The
6 EPA went up to 120 ppb. They are now discussing lowering
7 it. California has, I think, it is 90 now.

8 The interesting point, physiologically, I
9 found it to be fascinating. Really nothing happening at
10 .08 parts per million -- or say 80 parts per billion, 80
11 ppb of ozone for one hour, but 7 hours at 80 ppb -- they
12 just kept going for 7 hours -- and they then began to see
13 some real effects, which is kind of another interesting
14 case. It is: do you want a one-hour standard, which you
15 all thought was pretty good for ozone? And, now they are
16 apparently seeing real effects at these low levels of 80
17 ppb. I mean, everyday is that way out here. It is an
18 interesting point.

19 And, along this line, by the way, I think
20 this discussion, if we may -- I don't quite know how to
21 do this, Bruce, I will ask you, or Genevieve -- I would
22 like to particularly have this section of the transcript
23 when it is available sent to the various committee
24 members. Would you please, the panel members. I would
25 just like to have that in my reference. I think the

1 points that are raised are so relevant in this mutual
2 discussion, and so that all of it, I would like to see it
3 clearly in writing.

4 Now, that leads to another point about
5 exposure. What is the role of exposure? How is that
6 taken into consideration in Prop 65 deliberations? To
7 what degree can you call Prop 65 really a risk
8 assessment, which has to involve exposure and unit risk?
9 I would like to ask either of you that question.

10 Lauren, could you tell us?

11 DR. ZEISS: Well, I can take a stab at it --

12 CHAIRMAN PITTS: Sure.

13 DR. ZEISS: -- and maybe George can add to
14 it.

15 Prop 65 is a different type of law than we
16 are accustomed to, because it places the burden of proof
17 not on the regulators to show harm, but on the regulated
18 community to show safety. And, there is a citizens suit
19 clause which enables any citizen to take someone who is
20 violating the proposition to the court. So, there is a
21 lot of room for discussion as to what really should be
22 used in making exposure assessments. And, I don't think
23 we have completely come to closure on that.

24 There are some very rough guidelines in the
25 Health and Welfare Agency's Administrative Regulations which

1 were written to help implement the proposition, but they
2 are by no means detailed. And, I think that the way in
3 which the proposition has been operating is that it has
4 been on the businesses to provide warnings when they
5 believe that the exposure, coupled with the potency
6 estimates that we are generating, pose significant risks.
7 So, that is sort of a round about way of saying that it
8 is not well defined yet under the proposition.

9 CHAIRMAN PITTS: And, this would apply to
10 airborne Prop. 65 considerations, obviously, which is our
11 bag, although with multi-pathway assessment --

12 DR. ZEISS: Yes.

13 CHAIRMAN PITTS: -- we look right across.

14 Well, I am concerned about the question of
15 the assessments, and the increasing importance, as you
16 have indicated yourself, the high dose, the hot spot,
17 this is becoming extraordinarily important in so many
18 different directions, and how one anticipates those.

19 And, what I've seen in modeling for ozone
20 trends, I mean, I have a model published in one of the
21 best -- I've seen one that makes the assumption that if
22 you go to, say, alcohol fuels that by the year 2000, as
23 input data, there will be no refineries in Southern
24 California. Now, somehow or other, I don't think -- I
25 wouldn't want to bet on that. I would rather be inclined

1 to bet against that, that there will be refineries that
2 will be making gasoline in the year 2000. So, you are
3 seeing -- and then you see them guessing that you put
4 this input, and that input, and here is what is going to
5 happen.

6 I am not criticizing using the model, by any
7 manner of means, for exposure, by no means; but, again
8 the cautions that I have heard here, as applied to the
9 pharmacokinetic models, and pharmacology, should clearly be
10 put into these exposure models.

11 And, there is something still to be said for
12 not using the best sort of kind to epidemiology. I won't
13 use the exact adjectives that you used so graphically
14 about epidemiological information, but much of it you
15 still have to use the available data that we have,
16 inadequate as it may be, and then again, however, leave
17 the search for more improving of the data base. I think
18 that that is another aspect of what the gentlemen were
19 saying here: where do we go for research that is critical
20 to the whole risk assessment risk management scheme that
21 we are involved with? And that is a direction, both in
22 terms of the biological side and the ambient exposure
23 side. And, sometimes I fear that that isn't fully
24 recognized along the lines, or even across disciplines.
25 We tend to think that the other disciplines really have

1 it nailed, that is, the biological side. And the
2 biologists say: we know how to measure that, everyone
3 knows what ethylene oxide is, what the heck, you must
4 know that.

5 And, enough said, but I think the message is
6 clear, so this has been very interesting.

7 BOARD MEMBER FROINES: How does --

8 CHAIRMAN PITTS: Go ahead.

9 BOARD MEMBER FROINES: -- I have been talking
10 too much, but I just want to ask this, then I will stay
11 out of it for awhile.

12 What is the relationship between -- the
13 Department of Health Services' toxicologists and
14 biological scientists understand that the issue of dose
15 rate is an important one, Jim is raising it. And, most
16 of us raise it and don't always know how to deal with it
17 very effectively, but at least we know that it is an
18 important issue that we have to address over time.

19 What is the relationship between that
20 understanding in the Department of Health Services on the
21 one hand, and what the ARB does on the other, in terms of
22 ambient or in terms of monitoring of ambient
23 concentrations of toxics in the air? In other words,
24 does your concern about dose rate effects drive ARB to
25 develop sampling parameters that begin to address those

1 issues?

2 DR. ALEXEEFF: I would say sometime that it
3 does. We try to keep in close communication with them on
4 that issue. I can let ARB staff speak for themselves.
5 If there is information that we see, where there is an
6 example of dose rates being important, we would provide
7 it to ARB. One does not come to mind. Maybe one example
8 would be the whole multi-pathway approach that we have
9 developed. That was, in some ways, generated by the
10 Department of Health Services, and then ARB helped refine
11 the approach. We felt that we had to take another
12 pathway. We gave them suggestions on what input
13 parameters would be used.

14 And, in refining that multi-pathway approach,
15 we suggest updating the approach by new information that
16 we find for exposure assessment. That would be one
17 example.

18 Another one would be, ARB has come to us,
19 again under the hot spots program, and asking us, well,
20 how long should we be monitoring for a short-term effect?
21 One hour? Three hours? That sort of thing. So, we give
22 them our best guidance based upon how we thought the
23 strength of the biological data was, and in that case we
24 came to a one-hour kind of compromise, because, we
25 thought that one hour was a value that we could nail down

1 fairly well, biologically speaking, in terms of the
2 studies that are available.

3 We went to like a 10-minute parameter, or
4 something of that nature, and the biology is much poorer
5 because to conduct a 10-minute experiment by inhalation
6 is very difficult, and the information that is there is
7 sometimes uncertain. But, with one hour, there is a
8 pretty good wealth of information, and generally the
9 studies, you know, can be well designed in that area.

10 And, then there is a whole other area of
11 four hours that have been developed because of the
12 pesticide regulations, but we choose to stick with one
13 hour.

14 So, in that case, we kind of came to some
15 sort of conclusion with ARB on that one, but maybe they
16 have something to say?

17 CHAIRMAN PITTS: Yes.

18 DON AMES: For the record, my name is Don
19 Ames. That is A-m-e-s, and I am with the Air Resources
20 Board.

21 George, I think, has answered your question
22 quite well. We do work closely with the Department of
23 Health Services, and also the Department of Food and
24 Agriculture, in asking them what time parameters are
25 important.

1 In the case of ethylene oxide, we've looked
2 at, of course, the short term and long term exposures,
3 both. In fact, when we were doing some model validations
4 we went out in the field and were able to confirm that
5 our one-hour peak readings, in the neighborhood of the
6 very large emitter in the south coast air basin, do in
7 fact approach ppm levels which may be of concern for
8 reasons other than carcinogenicities. So, we do work
9 closely with the Department of Health Services, and the
10 Food and Agriculture, in asking their guidance in what
11 time frames would be important.

12 CHAIRMAN PITTS: Yes, Stan, Dr. Glantz.

13 BOARD MEMBER GLANTZ: One other area, which
14 is very kind of new and probably even more difficult to
15 deal with than what you have been talking about, is that
16 I think you should broaden the range of diseases that you
17 are looking at beyond just cancer. And, in particular, I
18 think you should look at heart disease. Work that we
19 have done now shows that heart disease -- or passive
20 smoking causes heart disease as well as cancer, and the
21 number of attributable deaths due to heart disease are
22 about ten times the number of cancer deaths, on the
23 extremely well worked out logic that is associated with
24 air pollution.

25 And it seems to me that there could very well

1 be significant contributions by some of these compounds
2 to heart disease as well as cancer. Now, some of the
3 effects of environmental tobacco smoke on the heart have
4 to do with things that are unique to cigarettes, namely
5 nicotine. And, some of the other effects have to do with
6 the fact that you can have reasonably high doses of
7 carbon monoxide, although not necessarily. But, there is
8 a fair amount of evidence that some of the effects
9 related, in fact, to cancer, that the process of the
10 development of atherosclerosis is a hyperplastic response
11 that is triggered by DNA damage through mechanisms that
12 are very similar to cancer. And, there is a little bit
13 of literature dealing with environmental aspects of heart
14 disease. Most of it is diet and individual behavior,
15 which probably reflects different political predilections
16 of the researchers in the cancer community and in the
17 heart disease community.

18 But, I think, you know, if our work on ETS is
19 at all indicative that we could be spending a lot of
20 energy studying the little piece of the problem, and
21 these other effects could be much, much larger. And,
22 there is not a huge amount of literature that I could
23 find in my looking at it, but there is some stuff out
24 there. And, I would urge you to broaden the scope of
25 this to beyond just chemical carcinogens -- I can't say

1 it! They put me on too early a flight! -- the cancer
2 caused by chemicals, for a little broader view of, you
3 know, chronic diseases.

4 The uncertainty level will go up when you do
5 that, but I think, you know, that if what we found is
6 right and at all typical, the public health impact of
7 some of these compounds could be a lot higher than we
8 have been thinking it was.

9 BOARD MEMBER BECKER: I think that I might
10 just suggest that you probably need a bigger strategy
11 there, because -- [voice fades]

12 COURT REPORTER: Dr. Becker, would you please
13 get on your microphone, so I can hear you.

14 BOARD MEMBER BECKER: -- I think you will
15 have to develop a strategy for noncarcinogenic human
16 health effects, because it is not a dichotomous variable,
17 so the end result is you are going to have to deal with
18 changes within the normal range, for instance, like IQ
19 points with lead. And, that is going to really tax you,
20 because cancer or no cancer, it is very different than
21 one to three IQ points from parts per million of lead in
22 teeth.

23 And, so you will need to have a strategy
24 which will address that, which will be very challenging,
25 and I think it would be useful to discuss that here. The

1 example of environmental tobacco smoke is a lot easier,
2 in light of Stan's new article that he published with
3 Bill Cromley, but, when it comes to something like
4 neurological effects, or enzymes in the urine, or CCs of
5 air lost with ozone exposure, and that is going to be
6 tough.

7 And, a real strategy about how you do risk
8 assessment around continuous variables within the normal
9 range is probably the future, because what we are really
10 trying to -- I mean, cancer itself, if you will just step
11 back for a second, is not preventable by the time it is
12 there, so you are going to have to, in a sense, address
13 how you deal with physiological changes within the normal
14 range, and that is going to be a challenge to all of us
15 here, and with public policy, as to how to address that.

16 DR. ALEXEEFF: Yes, and I think you are
17 right. I think both of you have mentioned an area of
18 research and concern which is on the verge of happening.
19 The question is, when will it happen? When will it
20 start? And, this is an area of concern to both of us,
21 and within our department, particularly with some of our
22 staff who are involved in pesticide evaluation, where a
23 lot of the effects are not carcinogenicity, but stress,
24 inhibition, or something of that matter.

25 And, I think one of the areas that have

1 possibly hampered real development to this field, is this
2 use of uncertainty factors, because if you can simply
3 just imply a ten fold here, and a ten fold there, then
4 you really don't worry about it any more, and there isn't
5 further investigation as to how one should really treat
6 this information. But, I think that is on the verge of
7 changing, at least in terms of discussions I've had with
8 people within our state agencies, and also EPA. They are
9 much more involved in trying to look at noncarcinogenic
10 effects in trying to develop methodology to handle the
11 information, because right now we have all of these
12 models, let's say, for cancer risk assessment. We have
13 how many different extrapolation models to choose? How
14 many different physiological models can we choose from in
15 cancer development? And then it goes on to none. How
16 many different correction factors can we choose? I
17 mean, we have all of these menus for cancer risk
18 assessment, but for noncancer risk assessment, it is
19 pretty much that there is this uncertainty factor
20 approach.

21 And, as Dr. Froines has pointed out, you
22 know, it is not the right approach in many cases, and we
23 are finding that it just is scientifically inappropriate.
24 It may work. It may end up protecting the public, but
25 there may be cases where -- well, there are obviously

1 cases where we are over, coming up with a value that is
2 so low we are going overboard, in terms of coming up with
3 a safe level. And, there probably are cases where it is
4 not being protective enough.

5 BOARD MEMBER GLANTZ: Well, see, though, the
6 point that I was trying to make is I think there may, in
7 terms of heart disease, which is a much more prevalent
8 disease than cancer, there may be -- some of these
9 compounds may be acting through, in fact, similar
10 mechanisms, and it may even be that you could use similar
11 models.

12 I think that you need to, you know -- then
13 there is the other heart disease, and other related
14 effects, which operate through different mechanisms. But
15 what I am saying is, I think that in terms of
16 carcinogenesis there is this other range of disease
17 which, in fact, similar biochemical and cellular
18 mechanisms may be playing enough of a role that you could
19 maybe even use some of the same models. And, I think
20 that the number of effected people could then be much
21 larger than you are currently estimating, just looking
22 narrowly at cancer, per se.

23 I mean, I think there is not a lot of data on
24 this, but I think it is an important thing to look at.

25 CHAIRMAN PITTS: From an exposure point of

1 view, again -- you can tell who is the atmospheric
2 chemist here -- along the same line, the evidence coming
3 from indoor air pollution, certain pollutants such as
4 formaldehyde, or nitrogen dioxide in homes with gas
5 stoves and closed windows, the levels are extremely high.
6 They are far higher than anything we will encounter in
7 ambient air, or even hot spot, basically, I think. You
8 are getting levels very high, and so the impacts of those
9 on health, to these species like this, there are special
10 cases, and, ETS is obviously the killer example, perhaps.

11 But, very important effects that may be in
12 addition to the nasopharynx cancer from formaldehyde,
13 there are a host of things that effect a very wide range
14 of the population, and I think those should be factored
15 in as indoor emphasis.

16 Have you got down your list?

17 DR. ZEISS: I think we are just about at the
18 bottom.

19 And, as I said, we should be coming out with
20 a draft probably early 1992 for external review. So,
21 thanks a lot for your help.

22 BOARD MEMBER SEIBER: Well, I didn't know you
23 were near the end of your comments. I was going to ask
24 about --

25 DR. ZEISS: Oh, okay.

1 BOARD MEMBER SEIBER: -- how you deal with
2 mixtures, thinking particularly of things like asbestos,
3 and PAH, things that are known to be deadly combinations.
4 Is that on your list?

5 DR. ZEISS: Well, mixtures is a very
6 difficult question, and traditionally that has been dealt
7 with by a different set of guidelines.

8 When we went down and picked out things to
9 consider first, mixtures was not one of them, perhaps
10 because we couldn't see the light at the end of the
11 tunnel. So, I think this is something that we probably
12 will end up considering separately from the guidelines.

13 But, any suggestions you have would be very
14 helpful.

15 BOARD MEMBER SEIBER: Well, it certainly is a
16 relevant problem now in the Sacramento valley, with the
17 rice straw smoke, and the finding of asbestos-like
18 particles, as well as the usual smoke-related products
19 with incomplete combustion. So, it seems to me that that
20 one ought to be moved up pretty high on the agenda.

21 DR. ALEXEEFF: Well, in terms of our exposure
22 approach that we have developed with the Air Resources
23 Board, we generally just assume that cancer effects are
24 additive between known carcinogens.

25 The one was your example of, let's say,

1 asbestos and benzopyrene, okay, and we might have risk
2 numbers for each, and then we can just add the effect.

3 And the other case would be, an example such
4 as PAHs, when we are talking about a family of compounds.

5 And, in that case, we can look at what happened with
6 dioxins where we decided which isomers were carcinogenic,
7 and then based upon a scheme developed the potency of
8 each isomer. With looking at chromium, we have decided
9 that hexavalent chromium was carcinogenic, and trivalent
10 was not.

11 Looking at -- let's see, what other classes
12 of compounds -- cadmium, for example, we just sort of
13 lumped them all together. That is clearly a complex
14 mixture.

15 Then, as we are getting now close to
16 benzo-a-pyrene, or PAHs, coming out as a document, the
17 fact that we will have a benzo-a-pyrene document which
18 will come before the Board sometime in the next year or
19 so, and in there we propose various schemes of evaluating
20 the different PAHs, based upon genotoxicity and
21 mutogenecity in other assays, because we don't have
22 cancer bioassays or these other components. We might
23 have enough to show that it is carcinogenic, but not
24 enough for a risk assessment kind of thing. Maybe just
25 an injection study, or something like that, which would

1 point to it.

2 So, I think for the specific mixtures like
3 PAHs we are going to be trying to handle those on a case-
4 by-case basis, as it comes before the Board, what we
5 think might be the best proposed method of utilizing all
6 of the data.

7 In some cases, diesel exhaust will also come
8 before the Board, and that is a complex mixture, yet we
9 have studies on diesel exhaust as the mixture, so we can
10 just kind of go with diesel exhaust.

11 DR. ZEISS: Yes, and George, you brought up a
12 very good point about taking the mixture of, say, PAHs
13 and trying to determine potencies on particular
14 compounds. And, that kind of approach will be addressed
15 to a certain limited extent in the guidelines, but, we
16 have been assuming that the case-by-case approach at this
17 point is probably the best way for others, as far as the
18 guidelines go.

19 BOARD MEMBER FROINES: But, it is one of the
20 things that is very disturbing to me, and Jim as well,
21 and I am not going to re-raise the issue, but those of us
22 folks who live in Southern California -- the ARB people
23 say, Oh, God, there he goes again! -- those of us who
24 live in Southern California and worry about PAHs and
25 nitro-PAHs, you know, it is the fact that we deal with

1 benzopyrene as a single compound, and don't come away
2 with a sense of what is the total risk to products of
3 incomplete combustion in Southern California, and is a
4 very worrisome issue to me, because it doesn't -- looking
5 at benzopyrene tends to obscure, or it may obscure the
6 magnitude of the problem. And, somehow we have to
7 address that, because when you start to look at
8 corrective measures, since the measures are so severe,
9 namely limiting cars, or whatever, in some form whatever
10 that may be, there is a lot of opposition to it.

11 So, the fact that we don't have good data on
12 PAHs as a totality in terms of their risk tends to limit
13 our risk management capability, it seems to me, And so I
14 think in the long run we are going to have to come to
15 grips with it, and I will just leave it at that.

16 DR. ALEXEEFF: Yes, and in that benzopyrene
17 document proposed, there are a couple of different
18 schemes, and maybe as we are working with the panel -- I
19 think ARB will know what the schedule is when that would
20 actually be released for public comment -- but, once we
21 work with the panel members on that document, we will be
22 happy to either expand the scheme or include other
23 compounds, or do whatever in order to get a sense as to
24 what the risk part might be. People have used some of
25 these schemes, gone to urban air, have measurements in

1 the urban air, and can then predict the total risk of
2 PAHs.

3 And, we were talking about the dose estimates
4 before, and ARB has asked us many times, you know, which
5 PHs should they be measuring in the atmosphere. And, for
6 us it is kind of a hard question to answer, because we
7 don't know which ones we are going to ultimately have
8 numbers for. So, I don't remember what we resolved, how
9 many they are measuring, but it is kind of a question of
10 the chicken and the egg: which one can you do first? You
11 can't measure all of the isomers out there, and we only
12 want to focus on the ones that end up being important,
13 because there are so many out there we can't evaluate all
14 of the risks of all of them, but it is hopefully we can
15 just kind of -- you can keep prodding us along so that at
16 some point we will come to a useful conclusion on that
17 one.

18 CHAIRMAN PITTS: Yes, and along that line, as
19 John said, it has been of concern to us because if so
20 much attention in the past has been placed upon the
21 classic PAHs, benzoanthracene, benzopyrene, and the idea
22 that well, pyrene really isn't any real problem. In
23 animal studies, maybe there is a touch of something
24 there, certainly with chrysine perhaps a touch, but
25 fluoranthene -- fluoranthene, that's, you know, a PAH

1 problem, naphthalene, but what it turns out, if you are
2 careful, because when you actually make the ambient
3 measurements, as has been done -- and the ARB is
4 supporting this program through their research division
5 -- there have been ambient measurements now carried out
6 over some years, and nitro-PHs are there, and that is
7 what you really breathe, one nitro-pyrene. Nitro-pyrene
8 is both directly emitted from cars, from exhaust, but it
9 is also formed in the atmosphere. Nitro-fluoranthene, two
10 nitro-fluoranthenes, even nitro-coumarins, by the way,
11 now have been found in ambient air, and have very high
12 activities in the Ames assay.

13 Now, I think the thing is you have got to be
14 very, very careful about over focusing on PAHs, per se,
15 and the past literature on PAHs, and not recognizing that
16 you have a whole host of compounds which you actually see
17 out there, what actually are involved. We must include
18 the secondary reactions, atmospheric chemistry, secondary
19 pollutants in a sense, primary and secondary pollutants.

20 So, we've gone through this at the diesel
21 conference, as you know, with the ARB, but it is a very
22 important area. I mean, think about it, for example,
23 ozone is a secondary pollutant, you know, and so that is
24 the product of reaction of high -- vol -- organic
25 compounds and NOX, and somehow, okay, that is secondary.

1 Well, the sort of things that we are talking
2 about here -- and not just nitro-PAHs, we are referring
3 to a variety of potential that can form oxides, of oxides
4 in ambient air. And, certainly with these PAHs, which
5 are very reactive, and you may get coumarins out of the
6 rearrangements. But, there is a variety of this, and you
7 musn't really neglect this aspect of the subject. And,
8 they are more soluble, by the way, of course, as you
9 know, nitrates, and when you put coumarin groups and
10 oxygens in those PAH rings, they become more soluble in
11 systems, body fluids, and so forth, the nitro groups. It
12 is just the picture, and that is where it is going.

13 And, the IARC, in the same article that IARC
14 used, the same big monograph that said diesel exhaust is
15 a probable carcinogen, it cites the one nitro-pyrene, the
16 two -- either the 26 or the 28 dinitro-pyrene as being
17 animal carcinogens, and possible human carcinogens, and
18 so -- pardon?

19 [Remark from back of room.]

20 Yes.

21 And, so it is very much worth considering,
22 and say in the case of pyrenes, you are converting
23 something that from, essentially, noncarcinogen to a
24 carcinogen in these systems, so it is -- yes, Chuck, go
25 ahead.

1 BOARD MEMBER BECKER: Regardless of what you
2 do, I would just make one suggestion that might help the
3 whole process, and that is after you have run this draft
4 around, perhaps we could have a consensus conference, to
5 bring the pros and the cons, so it isn't always just a
6 batch of paper from one side, and then another side. In
7 fact, I would like to see a consensus conference where
8 people came with opposing views about this modeling
9 system, or that modeling system, and we would publish
10 that, so that -- perhaps even this group could take the
11 lead in that, to get the right people in the right room,
12 and say: okay, this is what we are thinking about doing.
13 Tell us now what are the extremes of that? Because I
14 think that is coming in the health area, in general, that
15 we aren't perfect, that we don't fully understand what
16 causes cancer. We must go forward. Let's develop a
17 consensus about it. And, then we could go from there as
18 more scientific data comes.

19 But, I think it would be useful to have a
20 consensus conference at a place like this, where we
21 brought experts together to have a pro and a con, like
22 the absolute cons to talk to the absolute pros on a
23 subject, and then let the scientific community see about
24 it.

25 DR. ALEXEEFF: That is a good idea, and ARB

1 organized such a conference for diesel exhaust, which we
2 had, which I thought was very helpful. That was at an
3 early enough stage that we had a sense as to how
4 everybody felt about the whole data base on diesel, and
5 which were the area of uncertainties, and which were the
6 areas that needed to somehow either be refined or sort of
7 develop some kind of mechanism that we could incorporate,
8 either uncertainties or that sort of thing. That could be
9 useful.

10 I think that it would be ARB that would
11 probably organize it. I don't know exactly which --

12 CHAIRMAN PITTS: I didn't quite hear that,
13 but I would think so, from what I can see of the nods
14 around the table, and the interest, I think that Dr.
15 Becker's idea is an excellent idea. And, so that would
16 be illuminating, and it would be fun, very, very useful.
17 And something that could be perhaps be patterned after
18 the diesel conference, where specific questions are sent
19 out in advance to the various participants. That was
20 rather a small conference, 40 or 50, and we had
21 representatives from industry, the top people from the
22 motor car people, the petroleum people, the agencies,
23 academia, they were all there, and the specific questions
24 were addressed to them, various types, exposure
25 questions, impact questions, and so on.

1 And, finally what came out of it was a
2 document published by ARB then, with Dennis Shutzel and
3 Bob Faland, commenting on what actually was the consensus
4 that came out of this focused conference.

5 So, I don't know how we proceed.

6 Bill Lockett, how do we proceed to see that
7 we go ahead and move on a conference of the type that
8 would bring these two groups together. Two of you there,
9 and your representatives, and this group here. Could we
10 just express an interest? But, I would like to go beyond
11 expressing an interest. I would like to see that we have
12 some mechanism set up to see how this could be done over
13 the next year or two, or whatever the time scale is. I
14 think it is important.

15 CHIEF LOCKETT: Well, Bruce has noted that
16 down as coming from the panel as part of your discussion,
17 so it will be included in the summary of this meeting,
18 and we will do a little staff work and come back with the
19 proposal.

20 CHAIRMAN PITTS: Okay, and you will work with
21 George and that group?

22 CHIEF LOCKETT: Sure.

23 CHAIRMAN PITTS: Do you think that that would
24 be reasonable?

25 We did have a member of the Asilomar

1 Conference on bringing Prop. 65 together with the SRP,
2 and this could be something, perhaps, that could be --

3 DR. ALEXEEFF: I guess we need one
4 clarification. Are we talking about PAHs in particular?
5 Or complex mixtures in general?

6 BOARD MEMBER BECKER: Well, I think it should
7 be more general, because -- but it could be an ongoing
8 kind of thing.

9 But, I thought we were focusing on how -- now
10 you are going to make some changes that are going to be
11 different than federal policy, or whatever, and I think
12 if you are going to cut some new ground about all of the
13 things we've discussed, it would be good to have some
14 consensus about that. And, if you just focus in on one
15 topic, it tends to be very narrow. So, I would, at least
16 my own preference would be, to have the general issues
17 you've addressed this morning about everything from
18 scaling factors, to modeling systems.

19 CHAIRMAN PITTS: And, then you might have
20 the general -- I mean, right, these various issues and
21 points you have made are very interesting, and then the
22 use of some examples. That gets to, one would be PAH,
23 one might be dioxins, whatever the hot -- maybe back
24 again to methylene chloride, which has now gone through
25 kind of an interesting time, where the history is there.

1 Pick some examples of various types, particulate and
2 gaseous, let's say, and use them as examples as you track
3 through these.

4 Jim.

5 BOARD MEMBER SEIBER: I would add to that,
6 rice straw smoke.

7 CHAIRMAN PITTS: Yes.

8 BOARD MEMBER SEIBER: We might want to start
9 thinking more about that, particularly since these
10 studies were just recently published on the incident of
11 lung disease that showed actually that it is more
12 hazardous to live in the Sacramento Valley than in the
13 south coast basin, which just kind of threw everybody up,
14 and they couldn't believe that when they saw those
15 numbers. And, people want to understand that, so it of
16 intense interest, at least in that part of the state.

17 BOARD MEMBER BYUS: But, a lot more pleasant.

18 BOARD MEMBER SEIBER: Much more pleasant,
19 right.

20 CHAIRMAN PITTS: What a wonderful way to die,
21 right?

22 BOARD MEMBER FROINES: Has that been
23 published? That data?

24 BOARD MEMBER SEIBER: By the newspaper, by
25 the Sacramento Bee. I don't know if there has been a

1 published report. Maybe Chuck knows.

2 BOARD MEMBER BECKER: I was told it was in
3 the Sacramento Bee and we had rounds on it at the
4 university, and it was really a fascinating topic about
5 results from the burning of the rice straw, and there is
6 a lot of meteorological issue, and a lot of geological,
7 and other kinds of questions which come out of that which
8 are really quite fascinating.

9 CHAIRMAN PITTS: And, fogs, which are the way
10 these things are -- and the solubility. That is why I
11 was raising the question of solubility. Zoom, right into
12 the fogs that you have up there.

13 BOARD MEMBER FROINES: But, once they
14 determine that silica is a carcinogen, then all of our
15 beaches then become part of the equation, so we'll go
16 back up --

17 CHAIRMAN PITTS: The crystalline form, that's
18 right --

19 BOARD MEMBER SEIBER: Yes, it depends upon
20 the form, right. That is silica, hopefully.

21 BOARD MEMBER GLANTZ: You know, I am a little
22 -- I think one of the things you really need to look at
23 is how reasonable the assumption of additivity in
24 mixtures is, because if you look at asbestos and various
25 things, like cigarette smoke, which is probably actually

1 PAHs, you know, the lung cancer risk, if you are a
2 smoker, is about a 20, and the lung cancer risk if you
3 are a -- I don't know what it is if you are exposed to
4 asbestos alone, but I know that when you put them
5 together the relative risk goes up to 50 or 60.

6 And, I also know that radon interacts with
7 smoking and the risk of being exposed to the two of them
8 together is almost multiplicative. So, I think, in terms
9 of looking at your guidelines, the whole issue of complex
10 mixtures is very important, and you really need to look
11 at the additive assumption, because my guess would be
12 that you are going to find that generally there is more
13 an additive effect. I mean, I don't think there is
14 anything particularly special about cigarette smoking,
15 asbestos, or radon, that wouldn't be present in a lot of
16 other carcinogenic agents.

17 In fact, one thing we've talked about from
18 time to time in this sort of never-ending story of
19 prioritization and streamlining, is trying to move from
20 looking at compounds simply one at a time, to dealing
21 with them as classes or mixtures, and it would be nice if
22 you would address that issue too.

23 So, is this enough work?

24 DR. ZEISS: We will certainly try.

25 I think the guidelines' due date might have

1 to change, but we will certainly try.

2 CHAIRMAN PITTS: Well, I think that -- just
3 to maybe perhaps bring this to a close -- I think there
4 is urgency and relevance in the discussions that you have
5 lead so well, and I think that the panel has interacted
6 with these, and they are not new to any of us here, that
7 is the questions, but the urgency really is, you know.

8 When you hear, in this thing that we passed
9 out, the science article, the EPA says that, quote,
10 "Would involve the animal test at Abelson," who is the
11 editor, the editor of Science for so many years,
12 characterizes it as, quote, "An obsolete relic --
13 obsolescent relic of the ignorance of past decades."
14 And, the office of EPA points out, however, they haven't
15 said, developed an acceptable alternative, which is
16 another interesting point, also --

17 BOARD MEMBER GLANTZ: Of course, some people
18 might think that obsolescence of the animal test is
19 relatively humerous of the molecular biology --

20 CHAIRMAN PITTS: Ah, but in any case --

21 BOARD MEMBER GLANTZ: -- another alternative
22 explanation --

23 CHAIRMAN PITTS: -- it is here, it is here,
24 it is a major issue, and of course, basic to what Ames'
25 arguments are, at least as I understand it, are the very

1 questions that we have raised here, but in the context of
2 a more specific regulatory action oriented approach,
3 where we do have to do something approach, so that the
4 answers to this, or the discussion along the lines of
5 Ames versus the -- we will be actually very much involved
6 in and inherent in this type of discussion, but ours will
7 be focused as regulatory agencies, and scientists, the
8 science behind the regulations.

9 Okay, any other points?

10 BOARD MEMBER FROINES: I think that, just as
11 a matter of procedure, that the question that is still a
12 little bit unresolved is what is the relationship between
13 this panel and the Prop. 65 panel and this process that
14 is going to go on for the next year and a half? And, we
15 can interact with DHS, et cetera, as individuals, we can
16 interact as a panel, we can -- there are a number of
17 different ways to approach this issue, and I don't have
18 the slightest idea how we should do it.

19 But, it does seem to me that we need to be
20 close to and aware of the ongoing activities as a panel,
21 because in the long run it is going to effect our
22 deliberations really quite profoundly.

23 CHAIRMAN PITTS: I think that is an excellent
24 observation, and there are many things about Prop. 65,
25 like the risk assessments. I know the unit risks, and I

1 will buy the unit risks, fine, that is done. But, in
2 terms of risk assessments there has to be, I think, a
3 very -- an exposure portion of a risk assessment to be a
4 risk assessment, and a well done exposure, and I don't
5 know the degree to which 65 has that.

6 DR. ZEISS: Yes, the things that the
7 department is calling risk assessment on Proposition 65,
8 are potency, or unit risk evaluations.

9 CHAIRMAN PITTS: They are not really the --
10 and now we are finding that, as we are saying today as to
11 these potencies, they may very well vary with exposure,
12 you know --

13 DR. ZEISS: Yes, in fact, we --

14 CHAIRMAN PITTS: -- I mean, you may not --
15 that is of interest, and so it is of importance, and I
16 think John's point is very good. I think perhaps I could
17 speak for the panel, and certainly for myself, that we
18 would welcome more interactions with the Prop. 65 panel
19 and the scientists on that panel, that it would be useful
20 to set up -- and in the context, perhaps, of as you say,
21 of these discussions that Dr. Becker is recommending
22 getting a conference, then we obviously would have you
23 people, our group, 65 the panel, would be logical people
24 to address these questions.

25 DR. ALEXEEFF: One of the reasons that I

1 asked the ARB to put this item on the agenda was because
2 the guidelines are in an early stage of development now,
3 or revision, and I wanted the panel to be aware of this,
4 so that we could plan something, or approach it together
5 as much as possible, so that all of a sudden you are not
6 presented with: well, this is a new set of guidelines we
7 are functioning on. We are not using this model, we are
8 using this model, and all of these sort of things.

9 CHAIRMAN PITTS: That is very shrewd, chief.
10 Exactly, I think that is one of the things that is
11 important, not to feel that you have been blind sided, or
12 sand bagged, as poker players say, in something like.

13 I think, speaking for, I am sure for the
14 panel, too, one of the aspects of belonging to the panel
15 that is most enjoyable, is the scientific, medical, this
16 whole interaction, across the spectrum, and to be
17 involved in some degree with looking at new guidelines,
18 and getting involved in this whole process, not just from
19 a compound-by-compound look, but from a more broad
20 medical atmospheric science point of view. So, that will
21 be fine.

22 Okay, yes, Jim.

23 BOARD MEMBER SEIBER: One last comment, Bruce
24 Oulrey happened to have a copy of this article: "Top
25 Cancers at Home and Valley" and just to pique your

1 interest a little bit, it says, "The once pastoral
2 Sacramento region has become the cancer capital of
3 California, and teeming Los Angeles, world renowned for
4 its smog, has the lowest cancer rates among the state's
5 five most populous regions."

6 So, that is the sort of thing that is going
7 around where I live. And, if you would like, maybe we
8 could get copies of this.

9 BOARD MEMBER FROINES: That is because nobody
10 leaves the Sacramento valley, and everybody migrates into
11 L.A. So, your latency is about 15 months to three years,
12 I think.

13 BOARD MEMBER SEIBER: Maybe Bruce could get a
14 copy of this?

15 CHAIRMAN PITTS: Could you get us copies,
16 Bruce?

17 Well, one final point, and it may be that
18 Proposition 140 was really an act of the taxpayers who
19 were concerned about the health of the legislators, and
20 not their act -- putting that in for whatever it might be
21 worth.

22 Well, on that note, we will move to --

23 BOARD MEMBER GLANTZ: Are you sure that
24 Willie Brown will reappoint you?

25 CHAIRMAN PITTS: -- that is a good question.

1 Well, he will understand the humor of that. Fortunately,
2 he has a sense of humor, which is why he appointed me to
3 the other panel.

4 Okay, let's see. Shall we take -- it is
5 11:30 a.m., do you want to take a quick break at this
6 stage of the game, for 10 minutes, and then come back?
7 Let's do that. Let's take a quick break. And, I am not
8 sure that whether we cannot complete this agenda by lunch
9 time, which would probably make everybody happy about
10 that.

11 But, let's just take a quick 10-minute break,
12 okay? It is now -- I have 11:30 a.m. how about making it
13 11:45 a.m. and then we can go through and get completed
14 on this agenda.

15 [Recess]

16 CHAIRMAN PITTS: All right, we will
17 reconvene.

18 I would call to the attention of the panel
19 members that we have a memorandum here from Genevieve
20 Shiroma. It is in our packet. It discusses compound
21 prioritization.

22 So, I will turn the meeting over to
23 Genevieve, who will introduce Kitty, here.

24 MS. SHIROMA: Okay, thank you. I'll go ahead
25 and introduce the item.

1 Yes, at our last panel meeting we discussed
2 our methodology for doing a screening prioritization of
3 compounds that are sort of in the pool waiting to be
4 entered into the 1807 identification process. And, you
5 all endorsed our methodology, which included a number of
6 different criteria, and then you also asked us to take a
7 look at the noncancer effects. I think that is very
8 timely, and in keeping with the discussion we heard
9 earlier today about the importance of looking at acute
10 chronic noncancer effects as well.

11 Kitty Howard, of my staff, is here today to
12 provide you with a summary of a criteria that we have
13 come up with, and we have worked with Drs. Becker and
14 Davis on this, and so with that, Kitty, I will turn it
15 over to you.

16 MS. HOWARD: Thank you, Genevieve.

17 I have got a number of overheads that will be
18 over your shoulder there, so if you want to reorient
19 yourselves so you can see that a little better.

20 I am going to give you a brief summary on
21 the prioritization scheme that we have put together on
22 the compounds that are in the queue to be entered into
23 the various stages of the review process under 1807.

24 As Genevieve mentioned, we met last time,
25 December 4, and presented our initial scheme to you.

1 And, we got some very good comments, particularly in the
2 area of noncancer effects, and how to weave into the
3 prioritization scheme consideration of chronic and
4 possibly acute effects.

5 Dr. Becker and Dr. Davis formed an informal
6 subcommittee of sorts, and have worked with us and met
7 with us a number of times since December to help us to
8 design a method for recognizing the importance of the
9 chronic effects. In addition to that, DHS reviewed our
10 methodology and our various criteria that we are adding
11 to the prioritization method.

12 The method that we presented to you in
13 December favored consideration of cancer effects. So,
14 what we are showing you today is a method that equally
15 considers both cancer and noncancer effects.

16 The scheme I am presenting today includes the
17 following categories that you see up on the screen. The
18 first four are categories that we have retained from the
19 December meeting, and the last three are categories we
20 are introducing to consider this noncancer effect
21 mechanism.

22 As you recall, we are incorporating into the
23 scheme consideration of unit risk, as well as emission
24 estimates. The emissions we get from a variety of
25 sources, and as the 2588 program evolves we will be

1 depending upon those emission data more and more.

2 For the consideration of cancer we had the
3 IARC and EPA classification category. For noncancer
4 toxicity, we had an acceptable exposure limit scheme.
5 And, then, also we had consideration of whether or not
6 monitoring data was available. And, in all four of these
7 categories we presented to you the various scores that
8 could be earned for each of these. For instance, the
9 monitoring data availability, it was keyed to whether or
10 not there was a monitoring scheme available, how much
11 data we had, or whether or not there was a method at all,
12 or whether it was in the development stage. So, those
13 scores are all linked to the quality and the
14 extensiveness of the data.

15 The last three categories are the new
16 categories. The TLV, threshold limit values, or
17 biological exposure indices, have been put together for
18 occupational exposures. Now, we are not making a
19 decision as to whether or not the values are appropriate
20 for general exposure. We are merely saying that, okay,
21 for these compounds, some sort of effect has been looked
22 at, and that whether it is chronic or acute, it merely
23 says that there is some data available. And, later on in
24 this whole process, we will look at whether or not that
25 data is appropriate for extrapolation to the general

1 population. But, it merely starts the accumulation of
2 data for chronic effects.

3 In addition to that, there was an attempt to
4 consider whether or not a compound bioaccumulated or
5 persisted in the environment. Lead has been a compound,
6 or an element, that has been discussed frequently, and in
7 this case it is of utmost importance that it not only
8 bioaccumulates in the human body, but also in the
9 environment in general, and it persists for a long, long
10 time.

11 The final category that we added was the
12 consideration of what organ is the target of the adverse
13 effect? And, this again is the adverse effect -- a
14 noncancer adverse effect. We divided the human body,
15 basically, into seven systems. And, all are equally
16 weighted, except for the nervous system, and based on
17 consultation with Dr. Davis and Dr. Becker and Department
18 of Health Services, it was felt that the nervous system
19 rated a little higher ranking, so you could get a
20 compound that may have an effect in everyone of these
21 systems, and will give you a little higher score, so to
22 speak.

23 So, this last area, particularly in the area
24 of noncancer effects, it addresses multiple organ
25 systems, and multiple effects, in ways that the former

1 cancer oriented weighing schemes could not. Now, what
2 are we going to do with this system? We have
3 approximately 200 substances, 200 compounds, that are
4 waiting for entry into the AB 1807 phases, or phase
5 process. We will be looking at all of those compounds to
6 decide how to deal with them. Obviously, we can't deal
7 with 200 compounds over night.

8 The first set of compounds that we are going
9 to do, and it is sort of an experiment, is Dr. Becker's
10 favorite compounds. He was kind enough to nominate some
11 compounds that he would like us to look at, as well as
12 Dr. Davis. To the extent that the data is available in
13 each one of these categories, we'll do some quick
14 weighing, or scoring, and see how they fall out, and
15 whether or not this method is producing any surprises.

16 In some cases, we may end up with substances
17 which have no score, and while that may not say without a
18 doubt there is no effect, it may mean that there is no
19 data yet to either measure the compound or quantify the
20 effect. So, we will get two things out of this process:
21 one will be order for our queue, and the other will
22 indicate those areas for which we have no data, and for
23 which we could possibly in the future direct research.
24 So, that in a nut shell is our method.

25 I welcome any questions you may have on it.

1 BOARD MEMBER FROINES: Can we go back to the
2 previous slide?

3 MS. HOWARD: Sure.

4 BOARD MEMBER FROINES: Does this mean that
5 you are going to come up with a priority by adding all of
6 those scores together? In other words, you are going to
7 mix carcinogens and noncarcinogens?

8 MS. SHIROMA: In some cases compounds will be
9 examined for both cancer effects, or chronic, or
10 noncancer chronic effect.

11 BOARD MEMBER FROINES: Well, so that -- so
12 the answer is, yes, you are going to give it a cumulative
13 score.

14 MS. SHIROMA: Right.

15 BOARD MEMBER FROINES: So, the total is now
16 going to be -- whatever that adds up to be.

17 MS. SHIROMA: I think it is 36.

18 BOARD MEMBER FROINES: Then your -- it seems
19 to me, I don't understand the justification for that,
20 first. I don't agree with it.

21 Secondly, you are double counting. You have
22 got noncarcinogenic toxicity, and TLVs, and target
23 systems, all of which are not totally unrelated. And, so
24 you are, all of a sudden you begin to weigh your criteria
25 towards noncarcinogens in some ways, and given the fact

1 that, with the exception of lead, is a good example,
2 where we think that there probably is not much in the way
3 of a threshold -- whatever that means, I won't get into
4 it -- but, the risk of noncarcinogenic effects is
5 probably reasonably low at ambient concentrations. So,
6 we create the danger of forcing the noncarcinogenic
7 toxicity, which in part derives from occupational
8 exposures, to drive what is essentially an environmental
9 issue, environmental criteria.

10 MS. SHIROMA: Well, I think, if you will
11 look at some of these classifications, we have the IARC
12 EPA classification, which is the cancer assessment, and
13 then you have that balanced by the TLVs and BEIs so it is
14 essentially there what you are looking at is
15 classification. It is not quantification: has it been
16 examined by those agencies?

17 Bioaccumulation, on the other hand, is useful
18 for the compound, regardless of whether it has a cancer
19 or noncancer chronic effect. Dioxin would be an example
20 that comes to mind quickly for cancer, lead, for
21 noncancer. The monitoring data, obviously, is regardless
22 of whether the compound has cancer or noncancer.

23 Noncarcinogenic toxicity is offset by the
24 unit risk in the California emission data. There is a
25 little bit of a struggle there because it is difficult to

1 factor in an acceptable exposure level, or to multiply
2 exposure levels by the California emissions the same way
3 you did for the cancer effects.

4 But, I think, with the exception of the
5 target systems, and certainly the target systems could be
6 evaluated for cancer as well, but with the exception of
7 that last category, I think we have equal weighing of the
8 two, the two effects.

9 BOARD MEMBER FROINES: I don't think I agree
10 with that. I think it is not clear to me that you want
11 equal weighing. Are you wanting equal weighing? Why do
12 you want, in a sense, to mix them?

13 MS. HOWARD: I think that the trend,
14 certainly and we heard comments this morning, is to look
15 at effects in addition to the cancer effect, and this
16 method allows you to do that.

17 MS. SHIROMA: Right.

18 Dr. Froines, at the discussion at the
19 December 4 meeting was an emphasis on noncancer effect,
20 and bring some of those, I guess health reactions, to the
21 forefront, not necessarily to out weigh the
22 carcinogenecity, but to provide, I guess an addressing of
23 those kinds of health effects, as well, which are not
24 necessarily reversible types of health effects.

25 Also, our thought was that -- again we will

1 have to go through some learning experience here in going
2 through the 200 plus compounds that we expect will be
3 added to the 1807 list in March, but also that those
4 compounds that have both a carcinogenic response and a
5 noncarcinogenic response would rise to the forefront, so
6 that we would have to probably adjust those compounds
7 first.

8 MS. DENTON: My name is Joan Denton.

9 John, I think that you raise an interesting
10 question about whether we should weigh them equally.

11 What we did was we went back and looked at
12 the top 10 that we prioritized before, and if you
13 remember lead fell out the first, and we haven't finished
14 with the evaluation. But, indeed, we find that those
15 same carcinogens effect different tissues, they
16 bioaccumulate. I mean we are getting additional
17 information on carcinogens, and I think as Genevieve was
18 saying, we are actually weighing them more heavily if
19 they are both carcinogens and noncarcinogens.

20 But, I think we are certainly open to any
21 suggestions that you might have on it.

22 BOARD MEMBER FROINES: Well, I guess I still
23 feel that what we are doing is not entirely getting at
24 what I think is the real problem, which is, I mean,
25 having TLVs up there, having the fact that they have a

1 TLV makes no sense whatsoever to me. If you have got
2 noncarcinogenic toxicity and you have cancer unit risk,
3 the fact that there is a TLV, and there have been lots of
4 questions raised about the adequacy of TLVs, the question
5 is, what is the point?

6 And, the question that I really want to get
7 to is, I think that what we are trying to do is to
8 address the problem. We are not just doing an exercise
9 where we are preparing criteria documents. We are trying
10 to impact toxics in the air in some fashion. So, we need
11 to know something about how much are people being exposed
12 to them, and we need to know something about the risk of
13 toxicity.

14 And, in a certain sense I don't know if that
15 list accomplishes that task, and if it does, then it is
16 fine with me; but, if it doesn't then I think we need to
17 be concerned about it, because we need to be addressing
18 those problems first which have the most potential
19 adverse human health effects. And, I don't know whether
20 that does it.

21 BOARD MEMBER BECKER: Well, John, that is
22 exactly why we began with exactly that same question, and
23 proposed this to see if it does, in light of how it would
24 work out. And, I think the reason that the TLVs were put
25 up there is that it says there is at least a body of

1 information that somebody has looked at, inadequate as it
2 may be, that we can at least have some data on which to
3 look at.

4 So, do you think you should separate out
5 cancer from noncancer, completely? How would you handle
6 it?

7 MS. SHIROMA: And, perhaps, Dr. Froines, if
8 we could answer that question with a little bit more
9 background on the criteria.

10 You said that what we should look at are
11 people being exposed, and what is the toxicity of that
12 particular compound? The California emissions factor
13 there is intended to take a look at: what do we know
14 today about what people are being exposed to? And, I
15 think that the 2588 data, which will start coming in this
16 year, will help a lot with that, as far as enhancing our
17 knowledge of the myriad of compounds that are out there.

18 BOARD MEMBER FROINES: But, why do we put
19 them together? Those are two separate criterias.

20 MS. SHIROMA: And, that has --

21 BOARD MEMBER FROINES: One has to do with
22 risk, and one has to do with exposure. They should be
23 separate categories and not combined categories.

24 MS. SHIROMA: Well, we did discuss, in fact,
25 our first prioritization scheme had them separated. And,

1 then we had some discussion around the panel about the
2 need to weigh the emissions with the cancer toxicity, so
3 that for example, if we have a particular compound that
4 has thousands of tons in the inventory, but yet has a
5 very low unit risk, if we were to weigh the points by the
6 amounts of the emission, pure tonnage, that compound
7 would rise to the forefront, when in reality it was a
8 very low toxic type of compound.

9 Also, on the noncarcinogen toxicity, you are
10 right. It looks like there are two criteria there:
11 noncarcinogenic toxicity, and TLVs or BEIs. That
12 noncarcinogenic toxicity is based upon what we are
13 referring to as acceptable exposure levels. And, this
14 comes out of the work that DHS did for us for the 2588
15 hot spot program. And, it is work that Dr. Alexeeff has
16 done extensively on, as far as looking at an acceptable
17 exposure level to a noncarcinogenic compound, whether
18 acute or chronic. And, there are very few of those
19 values available to us at this point. There are just a
20 handful of values. And, they go beyond the TLVs or BEIs.
21 The TLV BEI category is a yes - no: is there a body of
22 information out there, or is there not?

23 Again, just to --

24 BOARD MEMBER FROINES: Well, why don't you
25 just use IRIS, and use a NOEL instead of a TLV? TLVs are

1 completely inappropriate, it seems to me, for this.

2 If you have a NOEL, then that is one thing.
3 If you have -- what is? I think a TLV is inappropriate
4 to arrive at occupational exposures.

5 MS. HOWARD: You are right, and that is why I
6 made the point, this category is not meant to convey that
7 we are using the TLV or the BEI. All we are doing is
8 asking the question, has a TLV or BEI been developed?
9 And, that brings in a new body of information. Has there
10 been a recognition that there is some effect? Or, has
11 there been a study as to whether or not effects occur in
12 the work place?

13 MS. SHIROMA: It is a yes - no question. You
14 either get zero points, or you receive four points. If
15 there is a body of information out there, that shows,
16 yes, there is a noncarcinogenic health response to this
17 compound.

18 MS. HOWARD: That category should be viewed
19 as parallel to the IARC EPA classification category. Kind
20 of the same type of consideration there.

21 MS. SHIROMA: Meanwhile Dr. Becker had asked
22 if you felt the two types of criteria should be
23 separated, carcinogenic or noncarcinogenic. It is a
24 question we've grappled with as well.

25 As I say, we are open for suggestions. We

1 thought we should try this out and see what compounds do
2 come to the forefront. We do know what our initial top
3 ten were. We've made the decision to enter lead as the
4 next compound. In the various iterations of the
5 methodology, we actually kept coming up with the same
6 ten. Now, we haven't been able to apply this yet to the
7 myriad of compounds, simple because there is quite a bit
8 more information that we need to look for, and we haven't
9 completed that yet. We do intend to continually update
10 our body of information about every three to four months.

11 Dr. Froines, if you have other ideas on this,
12 we definitely would be glad to hear them.

13 BOARD MEMBER BECKER: I think Dr. Davis and I
14 had the same questions that you did, and so we thought
15 that we would look at the compounds to start with, and
16 see what happens, and see if it is or isn't satisfactory.

17 But, I am not sure how else to do it, John.
18 They have got 200 compounds that they have to prioritize
19 in some way. How else could you? Help us to think about
20 that.

21 BOARD MEMBER BYUS: What is the argument for
22 not separating carcinogenic effects from noncarcinogenic
23 effects? Why don't you want to do that?

24 MS. SHIROMA: It is the difficult question
25 of deciding whether a carcinogenic effect is more

1 important than a noncarcinogenic effect.

2 I think, in our discussions with you folks,
3 at least my sensitivity has been raised that a compound
4 may have a noncarcinogenic effect and may eventually lead
5 to the same result, namely death, or irreversible health
6 effects. So, we were faced with the tough question of do
7 we place a concinogenic effect over that of a
8 noncarcinogenic effect, which may have in the end the
9 same result? And, that is where we definitely would look
10 to you panel members for advice on that. We have found
11 it to be a very difficult question.

12 CHAIRMAN PITTS: Waiting for advice. Any
13 advice or comments on this?

14 Okay, then let me -- go ahead.

15 BOARD MEMBER GLANTZ: Well, I think this is a
16 reasonable next step at trying to take into account the
17 noncarcinogenic effects, and in a way the fact that
18 adding them in leads you, it looks like, to the same top
19 ten is reassuring to me. What I would suggest, is going
20 ahead and let's look and see what the list comes up with,
21 and if it looks reasonable, then apply judgment to it.

22 MS. SHIROMA: We would like that opportunity.

23 CHAIRMAN PITTS: Would it be possible, when
24 you do this, to list them A, from the carcinogenic -- get
25 the score as a carcinogen, separately get the score as a

1 noncarcinogenic effect, and then get the total, and then
2 let's see the three lists of compounds. How do they look
3 when you go through 20 or 30 --

4 MS. SHIROMA: Yes, we can do that.

5 CHAIRMAN PITTS: -- and then we can go right
6 across and see where they stand.

7 Would that be okay?

8 BOARD MEMBER FROINES: But, you are missing
9 my point.

10 CHAIRMAN PITTS: No, I'm not. I got your
11 point.

12 BOARD MEMBER FROINES: No, okay, I'm sorry --

13 CHAIRMAN PITTS: I've got your point totally
14 here.

15 BOARD MEMBER FROINES: I think that --

16 CHAIRMAN PITTS: I am not saying that the
17 points are not equivalent -- I'm sorry -- I am saying
18 they are equivalent of noncancer and a cancer. I am just
19 saying for this stage let's see how they fall on the
20 effects. I am not relating and saying a cancer is
21 different or more, worse, or better than a noncancer.

22 BOARD MEMBER FROINES: I am concerned about
23 the fact that we are going to end up with more ethylene
24 dibromides and ethylene dichlorides, both of which are
25 carcinogens. So, I am not running this to be favorable

1 to carcinogens. I am concerned that we are going to end
2 up with a lot of irrelevant chemicals, because they meet
3 certain criteria which are not scientifically valid.

4 I am worried that we are going -- you can
5 have a noncarcinogen with multiple target systems with
6 TLVs that has some measure of bioaccumulation for which
7 there is maybe some monitoring data and maybe there is
8 noncarcinogenic, but for which the effects in the ambient
9 environment are so irrevelent that to take them up
10 because the scores add up is going to simply slow down
11 the process of dealing with the issues we have to deal
12 with.

13 Lead is the one that always comes up when you
14 look for a noncarcinogen and we all know that. But, I
15 defy you to find ten leads out there. And, what I worry
16 about, and I think what has happened, is we have gone
17 from people making the comment, we tend to over emphasize
18 carcinogens to the exclusion of noncarcinogens, to now
19 where the issue is getting reversed, and we are
20 emphasizing noncarcinogens without there being particular
21 justification for it, precisely because of that concern
22 that they are the ones that are always left out.

23 But, the fact of the matter is that for the
24 most part, for the most part I think it is fair to say
25 that at the concentrations we find in the ambient

1 environment, we are not going to find significant
2 toxicity from noncarcinogens. We have to be careful not
3 to set up an evaluation system that ends up with this
4 panel having to deal with ethylene dichloride, which is,
5 as you know, a waste of time.

6 BOARD MEMBER GLANTZ: Well, I, as one of the
7 people who has been pushing to try to come up with some
8 kind of prioritization for a long time, I would hate to
9 come back with irrevelent compounds. I mean, I agree
10 that that is a problem.

11 But, what I think we should proceed with is
12 to let them go ahead and do the ranking with these. And,
13 I think Jim's idea -- or whoever it was -- of coming up
14 with the carcinogenic score, the noncancer score, and a
15 total, and then you could generate three ordered lists to
16 compare.

17 And, then what I would suggest is that after
18 we get that is to then bring it back to us and let us
19 give you a recommendation of what the prioritization
20 ought to be, by not just slavishly looking at these
21 numbers, but, you know, looking at the lists as they come
22 up, and then applying some judgment, and then trying to
23 come up with an overall suggested prioritization.

24 I mean, it seems to me that I view this
25 scoring thing as a way of getting through a large number

1 of compounds, and hopefully what will come out the other
2 end will be the top ten, or the top however many, and
3 will be ones where we can develop a consensus that they
4 are important.

5 If something through, you know, a numerical
6 artifact pops to the top of the list, I don't see why we
7 couldn't then say back to the ARB, well, you know, it is
8 nice that it added up to a big number, but it is
9 irrevelent, we think. And, you know, suggest an
10 alternative prioritization scheme -- not scheme, but an
11 alternate list.

12 See, what I would like to see happen is to
13 go through this exercise and come back to us, and then
14 let us say, working with you, here is the priority list
15 that we would suggest, you know, based on -- you get
16 these different numerical rankings, and then we could
17 argue about it and then come up with the ones that we
18 would suggest would be the most important ones to look at
19 next.

20 What do you see wrong with that?

21 BOARD MEMBER FROINES: I am not arguing that
22 we get into immediately changing this. Don't
23 misunderstand. I am happy to go along. I have --
24 clearly, I am skeptical about it. And, I really worry
25 about over rigidifying approaches to prioritization based

1 on issues that don't identify real problems. That is
2 what I am really hoping we get at, and so I am willing to
3 try anything if it will work, so don't misunderstand.

4 I know that they have been working very hard
5 at this, and I appreciate that, and it is just a question
6 of this is a difficult issue.

7 I would be very interested in taking -- in
8 having -- talking about a need sometime for a consensus
9 conference. It would be very nice to take 200 compounds
10 and have a consensus conference -- well, maybe not all
11 200 -- but to have a consensus conference among
12 scientists to actually look at these kinds of issues, of
13 how one goes about this, because, you know, I have been
14 in the federal government, and we've tried to do it at
15 NIOSH, people do it at OSHA, people do it at EPA. I
16 mean, we just keep going around and around on it, and so
17 it is a very -- nobody has a good solution to it.

18 BOARD MEMBER BECKER: I think we are going to
19 continue to go around and around, because as we begin to
20 understand more, and develop molecular targets, and
21 develop more data, we are going -- it is going to be a
22 process that will be dynamic and not static.

23 And, I think the whole idea here was not to
24 create something in stone and to have a list that is
25 rigid, but just a way of allowing an agency that has 200

1 compounds, to enable them to put them in some ranking,
2 and then we can go back and see whether that is valid or
3 not.

4 So, what Tom and I did was to take out the
5 200 and say, well, look this is kind of off the top, but
6 is what we think the 200 might look like, and then they
7 were going to take this first cut and tell us how that
8 system would look.

9 I think the points that you have made are
10 excellent. The question is, I don't know how to do it
11 any better at this time.

12 BOARD MEMBER FROINES: We need a way, in
13 noncarcinogens to determine potential systemic toxicity
14 at low exposure levels. I mean, we need to be thinking
15 about that as an issue, as opposed to looking at
16 occupational exposures, and assuming that they may have
17 relevance at part per billion, you know, range.

18 And, so this issue of systemic toxicity of
19 noncarcinogens, you know, rather than just simply looking
20 at multiple target systems, answering that question, it
21 seems to me to have relevance, and we could actually do
22 that.

23 BOARD MEMBER BYUS: You didn't even consider
24 immunotoxicity.

25 BOARD MEMBER BECKER: Well, we discussed

1 that. Tom and I talked about that, and the question was:
2 how do you put that in? And, there is another whole
3 issue, and that is where does it effect? From a
4 pathology? And, so we had, at the outset, and that was a
5 little tricky, so --

6 BOARD MEMBER BYUS: Certainly, in terms of
7 long term exposure to low levels, that is a huge major
8 question, is immunotoxicity, as to whether it exists, and
9 if it does, what does it mean?

10 BOARD MEMBER BECKER: Well, it may come out
11 that what John suggested, is people would be looking at
12 heat shock proteins, or something else, as a marker of
13 the cell under stress, and that would eventually be put
14 into the system so that you could scale it in some way.
15 I don't know about that, but it is possible.

16 I think that just to simplify it, if we just
17 invite them to do it as you suggested, and then we can
18 come back and feed back. I think the nice part is we are
19 in the loop. We understand. They are being quite open
20 about how to do it, and are asking advice, and we can
21 take a look and see that maybe it doesn't work, and if it
22 doesn't, then we can fix it. We are not locked into
23 anything yet. It is just a suggestion.

24 MS. SHIROMA: And, we do definitely agree
25 that this should be a flexible process where once we come

1 up with our top 10 to 20 we use good sound judgment on
2 deciding whether a particular compound has merit or not.
3 And, not just to stay locked in with a point system and
4 say, well, this has got the highest points, therefore it
5 is next. We intended that this would be a screening
6 process.

7 CHAIRMAN PITTS: Are there other comments in
8 this regard?

9 [No Response.]

10 Do you have some specific ideas, as Chuck
11 suggested, John, that you might want to modify this. I
12 think this would be -- or how would you approach it?

13 BOARD MEMBER FROINES: I think we should go
14 ahead with what you proposed.

15 CHAIRMAN PITTS: Split it up in three ways.

16 BOARD MEMBER FROINES: And, maybe what I
17 should do, is try and develop some alternative
18 suggestions, so that we don't try to negotiate it, and
19 discuss it here in the room.

20 I would like to get a copy of the 200
21 compounds. I will promise to go through, and try and
22 come up with a prioritizing.

23 MS. SHIROMA: We will be glad to follow up --
24 well, first of all, with your proposal to show the
25 scores, and how the breakdown occurs, and then to follow

1 up with Dr. Froines', any ideas that he has. I would be
2 glad to work with you.

3 BOARD MEMBER FROINES: I will say one thing.
4 I still think that using the NOEL that you get out of
5 IRIS or the other EPA data base, would probably be better
6 than having a TLV.

7 MS. HOWARD: We do use that in the
8 noncarcinogenic toxicity category, the NOEL was used to
9 derive that value. So, those -- I think there were 30
10 compounds for which we had NOELs, and then a factor of
11 1000 safety factor was applied by DHS.

12 But, the TLVs and the BEIs -- not the values,
13 but the indication that they are on that list was the
14 mechanism to bring in those other compounds that were not
15 on DHS's original list.

16 CHAIRMAN PITTS: Well, one other, maybe one
17 comment again from the exposure point of view, we've
18 looked at this and it strikes me that the problem -- and
19 again, let's be specific -- say ethylene oxide, I am not
20 sure that we would recognize the hot spot problems of
21 localized high exposures which are really going to be the
22 problem, or vinylchloride near landfills.

23 Because if you take California emission
24 estimates, and now if that is assumed that is taken over
25 all of California, then that doesn't tell you where the

1 hot spot is, okay? It doesn't address that. And, then
2 if you take availability of ambient monitoring data, just
3 availability, much less what the numbers are, that
4 doesn't, ambient implying non-hot spot, it seems to me
5 that there should be something factored in here, as I
6 think about it today, that says, okay, there is hot spot
7 information.

8 And, as far as I am concerned, just like you
9 look for the hot ones in lead and vinylchloride, as
10 medical people, to me, just simply from the old
11 atmospheric chemist, the most important information I
12 could get from most of these would be hot spot data.

13 MS. SHIROMA: And, in fact we have --

14 CHAIRMAN PITTS: And, so that ought to be in
15 here and scored in some number that would be relevant.

16 BOARD MEMBER FROINES: Well, I think that
17 that is one of the things that I am saying. I think that
18 those should have very high priority. When you have real
19 exposure estimate, that should run the flag up, first,
20 and then you can bring in toxicity. But, I think
21 exposure is the prime and first criteria.

22 MS. SHIROMA: And, we are intending to
23 incorporate the hot spot data in really two ways.

24 First of all, historically indeed, we have
25 had this general emissions inventory that we have not

1 been sure of whether or not they have been comprehensive,
2 and 2588 data will help us to understand where the hot
3 spots are, and what the magnitude of the emissions are.
4 So, as that data comes in we will be able to incorporate
5 that into the first criteria of California emissions
6 times toxicity.

7 CHAIRMAN PITTS: I think it should be --
8 excuse me for interrupting -- but, I think it should be
9 specific. I don't think we should mix it with cancer
10 risk. I think that should be a specific item, is the
11 degree to which you are going to have hot spot exposure,
12 whether it is the San Joaquin Valley or Sacramento and
13 rice straw, or whether whatever it is. That should be a
14 number that sticks out and says, this is something we are
15 addressing. I think, when you mix it with the risk,
16 you've got, you are mixing two very important items.

17 MS. SHIROMA: And, again this is something
18 that we may need to -- again, we are looking at that,
19 yes, we would look at hot spot exposures, in terms of the
20 emissions data that comes in, linked with the toxicity of
21 the particular compounds.

22 CHAIRMAN PITTS: Okay, I guess what I am
23 saying is, the old game is that I would assume that this
24 is going to float around wherever it is going to float
25 around in the scientific community, and the legislative

1 community okay? I will not see hot spots in here. I
2 will not know, as John has said, perhaps the most
3 important aspect of air quality exposure is hot spots,
4 where the things are really, as we have seen, are really
5 bad.

6 So, I would think it should be explicitly put
7 into this system, if for -- certainly I think it should
8 be because of the scientific value.

9 But, I understand what you are saying that
10 you would do a scientific, but it would not be explicit.
11 So, I really believe it should be explicitly in here as
12 one of the key pieces of information anyone would want to
13 ask. The first thing they would ask on a compound is,
14 well, what are hot spot exposures? What are the numbers?
15 And, how did they get into this?

16 BOARD MEMBER FROINES: I meant exposure is
17 the highest. Not that hot spots are the highest.

18 CHAIRMAN PITTS: Well, exposure, yes. I am
19 talking about exposure, yes.

20 BOARD MEMBER FROINES: I mean, ambient could
21 be --

22 CHAIRMAN PITTS: Ambient could be, but it is
23 generally the other way. Generally, that is right.

24 MS. SHIROMA: You are saying that in any
25 discriptions, or including in our analysis we should

1 clearly indicate or document the use of hot spot data?

2 CHAIRMAN PITTS: Well, when you have a
3 number score, I think this thing should be written to
4 have a number next to it, or exposure, as we are saying,
5 exposure, and you could break it into two forms: an
6 average for the state, if it is something like lead may
7 well be, a general background, or benzene, okay, which
8 are pretty broadly distributed.

9 But, when you are talking about chromium, and
10 you've got a chromium plating plant down the street, you
11 have got a problem there. And, that should be reflected,
12 both of these should be reflected in some way in your
13 scoring system.

14 MS. SHIROMA: So, are you recommending that
15 we glean out a separate, maybe subcategory in that
16 initial eight points?

17 CHAIRMAN PITTS: Well, you may want to add
18 more points. I mean, that is something -- you may want
19 to add more points to it, and not just to the -- because
20 if you put it out of the eight -- if you take too many
21 out of the eight, you won't have much left for cancer,
22 which is the major thing we have been doing on this
23 panel.

24 And, that just occurred to me, but let's let
25 the other panel members discuss this.

1 Jim, do you have any comments? You are the
2 exposure, another atmospheric scientist here on the
3 panel.

4 BOARD MEMBER SEIBER: I don't have any
5 comment yet.

6 MS. SHIROMA: And, perhaps maybe I could just
7 sort of think this through out loud. And, what I am
8 thinking is that when we look at a hot spot exposure, say
9 under the 2588 program, basically we would be looking at
10 the maximumly exposed individual. So, this concept is
11 that a particular facility poses a specific risk to
12 individuals living within the vicinity of that facility.
13 And, that is important. It could be a very high risk in
14 a very small population, and that is important.

15 And also then, on the other hand, it is
16 important to look at, from a California view point, how
17 many people are being exposed to a specific risk from the
18 compound. So, what we had thought we would do in that
19 first category, would be to incorporate both of these
20 concepts that one, with the emissions we will know
21 overall what that means to California, but it would
22 incorporate the hot spot information.

23 But, what I think you are saying is that we
24 should also place importance on, even though there may be
25 just a few people exposed, if it is a high risk, then

1 there should be a certain number of points attached to
2 that. Because there really are two different things
3 going on here.

4 CHAIRMAN PITTS: That is quite correct, and
5 I think there are real problems, a very large share of
6 problems of cancer are going to be hot spot type, quote -
7 unquote, exposures.

8 Didn't we find out that there were several
9 million people around one of those landfills when we
10 really looked at it?

11 MS. SHIROMA: Right, right.

12 CHAIRMAN PITTS: That was a hot spot, and
13 that was a couple million people, so that is a major
14 exposure, as against, maybe 3000 around a nickel plant,
15 where you have a number on nickel. So, it seems to me
16 that you could do both, whereas, benzene is pretty
17 ubiquitous, and may be around refineries, and that is a
18 different issue.

19 But, they should be treated explicitly and
20 set out so that when something goes out, and someone is
21 going to ask you, on that page, what you will be doing
22 will be explicitly noted with a score, or as saying you
23 have done exactly what you are doing, but it ought to be
24 made clear explicitly.

25 MS. SHIROMA: Okay.

1 CHAIRMAN PITTS: And, with some judgment, put
2 some judgment on it.

3 MS. SHIROMA: Well, we had envisioned, in
4 terms of the actual practical implementation of this
5 concept was, to go ahead and go through the
6 prioritization scheme, and then when we do get our top 10
7 to 20, go through and take a look at the specific hot
8 spot information.

9 CHAIRMAN PITTS: Well, why don't you do it
10 first? It seems to me --

11 MS. SHIROMA: If that is what you --

12 CHAIRMAN PITTS: -- you would be better off
13 to do it first. Well, why don't you it -- my concern is
14 lists become engraved in granite. I mean, here is a list
15 that will go out. It will go out to the public.
16 Regardless of what you say, it will get out. Well, what
17 happened? Well, gee, I don't even know, here is an
18 exposure, and so forth. It should be done, I think, with
19 the list, which should have with it the criteria and be
20 presented --

21 MS. SHIROMA: So, we should attach --

22 CHAIRMAN PITTS: -- yes.

23 MS. SHIROMA: -- you'd like us to --

24 [General discussion evolves.]

25 BOARD MEMBER GLANTZ: But, the problem is,

1 the whole idea of this process was to screen a lot of
2 compounds, to try and help people focus in on what is
3 important. And, I am a little worried that in doing this
4 we are sort of going back to like, let's write a little
5 report about each compound. And, I have been trying to
6 move away from that in this.

7 I think that the general issue of some how to
8 take hot spots into account is okay, but I would hate to
9 end up with something that is too detailed that they are
10 producing, because I think that defeats the purpose of
11 the exercise.

12 And, I have to say, I mean, when they came to
13 us before, and had the cancer risk and the emission
14 estimates as two separate items, then people said: no,
15 no, combine them. And, now they have combined them, and
16 we are saying: no, no, pull them apart. And, I mean, in
17 the end it is probably not going to make any difference.

18 CHAIRMAN PITTS: Gary.

19 BOARD MEMBER FRIEDMAN: May I just suggest a
20 compromise. In just that item one, to say DHS cancer risk
21 and California emissions estimates both average hot
22 spots. How would that be?

23 CHAIRMAN PITTS: Ah, that is all we are
24 saying. That is right. Then you have nailed it.

25 BOARD MEMBER FRIEDMAN: Just elaborate that

1 one thing without breaking it up --

2 CHAIRMAN PITTS: Then you don't have to --
3 Jim.

4 BOARD MEMBER SEIBER: I went back through my
5 notes from the last meeting, and it said phase two is
6 going to take in the hot spots, and some other things,
7 atmospheric persistence, and that. So, this was really
8 -- we apparently talked about it then, and thought, well,
9 the hot spots could wait for phase two, is what I think
10 we --

11 MS. SHIROMA: That was our original
12 intention.

13 CHAIRMAN PITTS: Well, okay, I think we are
14 okay.

15 Could you do as Gary said, to just simply
16 write that in? All I want is for your protection. We
17 know what you are doing.

18 MS. SHIROMA: Okay.

19 CHAIRMAN PITTS: But, it really is in the
20 sense to say, look we have looked at these. You've
21 answered their questions, maybe, in some minds.

22 Let me just say one last thing, because we
23 have to go to lunch, I have been told, and we've got
24 about a minute to go. Let me just --

25 BOARD MEMBER GLANTZ: We have more than that

1 to talk about.

2 CHAIRMAN PITTS: -- before lunch? Well,
3 okay, but we have to go to lunch or we don't eat lunch.

4 BOARD MEMBER GLANTZ: Well, okay.

5 CHAIRMAN PITTS: That is the message I got.
6 So, we will come back and talk about this.

7 Let me just put this in perspective. From
8 several sources, which I consider to be pretty
9 unimpeachable, there is no question that current
10 legislation for the 1807, modifying it, and the
11 modification of the hot spot bill, and this whole
12 approach, modification, review panel, is kicking around
13 Sacramento. It is going through various environmental
14 groups, and other groups, proposals are being developed
15 for various legislators about how you would change the
16 entire risk assessment process, and it is very clear --
17 and this is why prioritization is so important -- it is
18 very clear that inherent in these is the idea, well, we
19 will just take the -- what do they call them? HAVs? The
20 HAVs and HAV nots? What is it, hazardous?

21 MS. SHIROMA: Health assessment values.

22 CHAIRMAN PITTS: Health assessment values,
23 there are compounds, 200 or 300, and one would just
24 simply declare that those are going to be TACs,
25 basically. These are ideas that are kicking around, and

1 I've heard this from various groups. So, it is clear
2 that we do need priorities. It is clear that this is a
3 very relevant discussion, and we will be faced sooner or
4 later with this question of really pinning it down in
5 more detail.

6 But, I think that adds some urgency to this.
7 This is a matter of -- and that is why I don't want to
8 put it off either. I mean, I think we are much better
9 off to go ahead, as you have done, a lot of thoughts have
10 gone into it. But, be very careful how this is handled,
11 and what assumptions are inherent in that list, because I
12 want to be very careful about that list, to be sure that
13 it does in fact reflect -- has gone through the
14 iterations that we all want to see.

15 BOARD MEMBER FROINES: May I just make one
16 point and comment?

17 CHAIRMAN PITTS: Yes.

18 BOARD MEMBER FROINES: I have the one
19 advantage of not having been here for the last meeting,
20 so I can't be held responsible for anything.

21 But, the thing I was going to say is I agree
22 with Gary, insofar as -- and I would just take it one
23 step further and say that there should be a category
24 which we call exposure, which includes hot spots,
25 ambient, and anything else we could come up with, and

1 that in developing the list of priorities, the ranking,
2 that you rank the potential for exposure. And, so we
3 are, in a sense, dealing with estimates of a potential
4 problem.

5 Now, we are later going to factor in toxicity
6 to see how toxicity times concentration -- or exposure
7 times toxicity turns out, in terms of quantitative risk.
8 But, if we had a category which was not just ambient, not
9 just emission data from the, you know, whatever you call
10 it, but, if we had monitoring hot spot and ambient under
11 an exposure category, then we could figure out a way to
12 rank them on the basis of potential exposure.

13 CHAIRMAN PITTS: I think that makes a lot of
14 sense.

15 Would the rest of the committee, would you
16 agree with that gentleman? Would there be any problems
17 with that?

18 I see nods all around. I think that would be
19 a suggestion, then, okay? That you modify it and put in
20 an exposure category, explicitly, as indicated by --

21 MS. SHIROMA: So, we go back to putting it --

22 CHAIRMAN PITTS: We are not going back to
23 square one.

24 MS. SHIROMA: -- which is -- okay, do I
25 understand that it is the recommendation of the panel

1 that we go back and put an additional emphasis on
2 exposure, disregarding the -- well, okay, exposure as a
3 separate category, and then later on weave in the
4 toxicity of the compound? Both carcinogenic and
5 noncarcinogenic?

6 What I am wondering is, if in the next few
7 months here you can go back to giving us a chance to work
8 with the prioritization scheme that we have developed,
9 and see where the compounds, you know, the 200 or so
10 compounds fall, because I am just thinking that it is
11 almost as though you are suggesting that we start all
12 over.

13 CHAIRMAN PITTS: I know what you are saying.
14 I don't think you should have to go back very far. I
15 think what John is saying is you don't have to go back
16 very far. You can take the very criteria that you said
17 you will be using under one, emissions estimates, and
18 say that we have looked at hot spot. You will be taking
19 the availability of the monitoring data, so you will have
20 looked at it anyway, so it is not adding an additional
21 burden, per se. You will be looking at this in your --
22 as one of these other -- but you will separate it out
23 because in risk assessment you have your risk, and you
24 have exposure, and it is a very critical factor, and
25 people would like to know the degree to which exposure,

1 high exposure versus very low exposure. It is a very
2 important item.

3 Yes, Gary.

4 BOARD MEMBER FRIEDMAN: It seems like they
5 were responding before, saying that tons of stuff is not
6 equal to tons of stuff, if some things are very low
7 toxicity and some are very high. It seems like you
8 already adapted to that criticism or suggestion by
9 combining the two in number one, and now we are telling
10 them to go back to where they were before.

11 MS. SHIROMA: I am thinking about --

12 BOARD MEMBER FROINES: All I am suggesting is
13 that you try and incorporate what you know about
14 exposure, whether it be emission monitoring, or ambient
15 data, and in terms of estimating, for example, potential
16 numbers of exposed at some levels with some distribution
17 associated with that, and that you then can multiply that
18 times your unit risk value to come out with a ranking.

19 So, it seems to me that all you are trying to
20 do is to incorporate -- and instead of just incorporating
21 emissions data, which has a lot of inaccuracies in it,
22 and has some problems, it is to figure out how you can
23 get the best estimate up to the degree to which people
24 are exposed to a particular compound, and then link that
25 with toxicity.

1 And, I don't really care one way or the
2 other, whether you do the toxicity linkage with the
3 exposure before or after. I just think you need to know
4 what the scope of the exposure problem is, that's all.

5 MS. SHIROMA: I am concerned that what you
6 are talking about is doing a risk assessment for these
7 compounds, when we really have a paucity of data out
8 there. We are putting a lot on 2588, that 2588 will tell
9 us lots of information about exposure. This year,
10 hopefully, that will tell us whether our expectations are
11 going to be played out. It just seems to me that we went
12 through a lot of this kind of discussion earlier on, and
13 it is not as though we have enough information to do a
14 risk assessment, taking monitoring data times toxicity.

15 I guess at this point -- I'm sorry, Dr.
16 Glantz.

17 BOARD MEMBER GLANTZ: May I suggest that we
18 have a modification to Gary's semantic sollution, and
19 that is the change -- I don't hear anybody saying that
20 there is any serious problems with trying to allocate
21 points based on exposure and toxicity combined. I don't
22 think that is controversial. Why don't you simply say,
23 number one, just change that to say, DHS cancer risk and
24 California exposure estimates. Okay, and exposure would
25 include ambient and/or hot spots exposure. And, I think

1 that gets at the issue that people are concerned about.

2 CHAIRMAN PITTS: Yes, I think that is right,
3 to take that. You have covered the issue, everything is
4 covered.

5 MS. SHIROMA: Which is, I think, how we were
6 planning to proceed.

7 CHAIRMAN PITTS: Well, if it is exactly what
8 you were going to do, then why not say it.

9 MS. SHIROMA: Sure, to make it clear in any
10 written documentation.

11 CHAIRMAN PITTS: All right, on that basis,
12 since we do have to move along, or we -- do you want to
13 go down there and plead our cause, and say we are saving
14 society or something?

15 UNIDENTIFIED SPEAKER: We have already
16 pleaded your cause, Mr. Chairman.

17 CHAIRMAN PITTS: Okay, then we need to have
18 two -- then with that modification, do I have the
19 concurrence of the panel?

20 The panel obviously agrees with you on that.
21 So, we will go ahead on that basis. We appreciate your
22 input, and we will look forward to these priorities, and
23 interactions. It is a great idea.

24 MS. SHIROMA: Great.

25 CHAIRMAN PITTS: Now, I needed two quick

1 things. We must decide -- Michelle, is she here?
2 Before we do anything else now -- somebody has to get a
3 plane -- we need to set the next date of the next
4 meeting.

5 Bill, will you handle that? Bill Lockett.

6 Thanks very much, ladies.

7 MS. SHIROMA: Thank you.

8 CHAIRMAN PITTS: We will look forward to your
9 efforts.

10 BOARD MEMBER GLANTZ: Are we going to
11 reconvene?

12 CHAIRMAN PITTS: Yes, after lunch.

13 [General discussion of the next meeting date.]

14 So, let's go ahead and say April 22, and that
15 will be in the north, is that right? Okay, good.

16 Now, one last question, we need a volunteer
17 for lead persons for methyl parathion, Part B on methyl
18 parathion. Does that interest you at all?

19 [General discussion.]

20 BOARD MEMBER FRIEDMAN: I'll take a part B
21 for something, it doesn't matter.

22 CHAIRMAN PITTS: Okay, you are on.

23 So, for methyl parathion, we have Gary, okay,
24 for part B.

25 BOARD MEMBER FRIEDMAN: Okay.

1 CHAIRMAN PITTS: Now, what is the next one?
2 Butadiene, part B.

3 BOARD MEMBER WITSCHI: That's me.

4 CHAIRMAN PITTS: Pardon?

5 BOARD MEMBER WITSCHI: I'll take that.

6 CHAIRMAN PITTS: Okay, very good.

7 Okay, now we have got styrene.

8 UNIDENTIFIED SPEAKER: No, you don't need to
9 decide those today.

10 CHAIRMAN PITTS: Oh, these don't need to be
11 decided? Fine, forget them then.

12 BOARD MEMBER BECKER: I'll do the B.

13 CHAIRMAN PITTS: And, lead, we've got a B for
14 lead right here. So, there is the B.

15 UNIDENTIFIED SPEAKER: Let us move
16 expeditiously.

17 CHAIRMAN PITTS: Okay, well, that being the
18 case, those who have to reach aircraft, we have made the
19 crucial decisions, so you can get a quick lunch, if there
20 is one left. It may be quicker than you think, if we
21 don't go now.

22 BOARD MEMBER GLANTZ: Wait, we could have
23 been done and finished with this in the time that we have
24 been arguing about whether to deal with it.

25 So, why don't you at least let Becker say

1 what he wants to say, and then we can argue about it.

2 BOARD MEMBER BECKER: Yes, at our last
3 meeting, we had asked that we bring forward environmental
4 tobacco smoke in light of our concerns with that
5 directly, and I think it has just become evident to
6 several of us that it has been difficult to do that.

7 So, I thought maybe what we might do would be
8 to send something directly to Jan Sharpless and Ken
9 Kaiser, just expressing our concerns about that. And, we
10 prepared a draft of what we might say. And, that would
11 be that our panel recommends that environmental tobacco
12 smoke be entered into the AB 1807 process for
13 identification of toxic air contaminants. And our
14 reasons include the documentation of the health effects
15 in California IARC classification, environmental tobacco
16 smoke is in air, there are noncancer effects that have
17 been described, especially in children at low levels,
18 that there is evidence that it causes diseases very
19 strong in light of the other compounds, and that we'd
20 like to push this forward in light of this.

21 And, we have discussed this, and so maybe
22 you'd could just comment on what the position was before.

23 MS. SHIROMA: Yes, I can share our staffs'
24 thoughts on how to go about addressing your
25 recommendation.

1 First of all, we could look at a formal
2 identification process, and while this may be okay in the
3 long run, our view is that this could be very slow and
4 burdensome, in terms of formally entering ETS into the
5 process, collecting public comment, putting together the
6 Part A, Part B, Part Cs, all of that could be a very slow
7 and burdensome process.

8 So, we thought we could also entertain an
9 alternative, which would be to go before our Board in the
10 next few months or so with a discussion to them about
11 ETS, and seek their approval of a resolution, a
12 nonregulatory resolution, which could be accomplished
13 fairly quickly, wherein they could recognize that ETS is
14 a very significant public health problem that needs to be
15 addressed and mitigated, where the Board could encourage
16 local and other state regulatory agencies to make this,
17 say, a priority item. And in that way we think that we
18 could at least provide an alternative response to a
19 formal identification of ETS for the near term.

20 We think that this kind of proposal -- again,
21 this is a staff proposal -- would quickly respond, and we
22 intend to meet with our executive office in the next two
23 weeks or so, by early March, to discuss this with them to
24 see if they agree with us, and we would be glad to report
25 back to the SRP at your next meeting on the status

1 BOARD MEMBER GLANTZ: Well, I've talked to
2 Genevieve about this a bit, and I am willing to entertain
3 that as an option, but I would still like to move forward
4 with us sending this letter to Jan Sharpless and Ken
5 Kaiser for several reasons.

6 First of all, while I think that the
7 alternative that is being discussed might well be a good
8 one, I am not yet convinced. And, I think that the Board
9 will be, at its March meeting, discussing the priorities
10 for the next year, and that if this isn't put before
11 them, the odds are that it will be delayed an entire year
12 at least.

13 Secondly, I don't see that the suggestion
14 that the letter that Chuck read would in any way preclude
15 what you are talking about doing. And, so I would -- I
16 appreciate that the staff who is here has been quite
17 forthcoming in dealing with these issues. I also
18 appreciate the fact that there are political concerns
19 higher up, and I think that rather than having you guys
20 caught in the middle, in a way, that we should go forward
21 with the letter on behalf of the panel. It might even be
22 worth having this discussed at the March meeting of the
23 ARB, when they are discussing the other prioritization
24 issues. At least it was my understanding that that was
25 going to be on there, at the March meeting.

1 And, then just, you know, we can continue to
2 discuss this at the April meeting, but I think I would
3 like to move forward with the letter. From all of the
4 staff people that I have talked with, no one has said
5 that it would hurt anything, and it might help.

6 BOARD MEMBER BECKER: Well, I think I would
7 like to encourage the other panel members to support
8 that. I think it is a credibility issue about this, in
9 the persistence of the data, and I think we dance around
10 this a lot, and I think it is reasonable to write the
11 letter to these people directly. It just lets them know
12 what our concern is.

13 And, I just want it clear that our interest
14 is not to go around the process through you all. It is
15 just a matter of whether this would add further weight to
16 it. I don't see how -- do you see -- maybe I should just
17 ask you for your opinion. Do you think that the writing
18 of this letter would -- I don't think it is brusque or a
19 problem, and I don't see how it could hurt. Do you think
20 it would be a problem for you at all?

21 MS. SHIROMA: No, no, it wouldn't be a
22 problem. It is your prerogative, if you would like to
23 send a letter. We have been pursuing some action on this
24 since the last SRP meeting, but it certainly is your
25 prerogative to go ahead and send a letter.

1 CHAIRMAN PITTS: Mr. Lockett, Bill, do you
2 have any comments you'd like to make?

3 CHIEF LOCKETT: I was just trying to reflect
4 on what Dr. Becker was saying.

5 I think the unknown at the moment is the new
6 secretary designate for CAL EPA, who is Jim Strock. He
7 doesn't come until March 1 to head up the new agency that
8 is being formed, which will presumably include pesticides
9 and toxics. That has not been worked out yet under the
10 new administration.

11 We do not have a secretary for Health and
12 Welfare, so we don't know who that person is, or what
13 dynamic that will be.

14 My sense is that Dr. Kaiser has not been
15 reappointed, to the best of my acknowledge. Whether he
16 is staying or not is still an unknown.

17 So, those are just variables that go into the
18 political equation, and I can't give you any more
19 analysis about how those pieces sort out.

20 BOARD MEMBER GLANTZ: George, could you just
21 say something about how this would be viewed from your
22 perspective?

23 While George is coming up, I don't think
24 those political considerations are something that we
25 should even worry about.

1 MR. ALEXEEFF: ETS has already been declared
2 through our Prop. 65 process as a chemical known in the
3 state to cause cancer, so I think it would just be
4 considered by our process as another way of clearly
5 stating our concern for ETS. I don't know if we have any
6 problem with it.

7 BOARD MEMBER BECKER: So, why don't -- I
8 think if we sent the letter to Jan Sharpless and not to
9 Ken Kaiser, do you see any problem with that, Bill?

10 BOARD MEMBER GLANTZ: Well, why not send it
11 to both of them?

12 BOARD MEMBER BECKER: Sure.

13 Do you see any problem? The main thing is I
14 don't want to create a problem about it. We don't want
15 to look like we are going around the system in any way.

16 CHIEF LOCKETT: It is just hard to assess
17 because we don't have a good bead on the new
18 administration. We don't know which Board members are
19 going to be staying, and which ones will be replaced.
20 That is just an unknown. So those are just pieces in the
21 puzzle, in the sense that there are a lot of unknowns
22 here, so I can't really tell you what the impact is going
23 to be. I don't know who the Board members are going to
24 be at the March meeting, for example. They could be the
25 same ones, or they could be significantly different.

1 They all serve at the pleasure of the Governor.

2 The one sure thing, I suppose -- even that
3 isn't sure -- is that the Governor has reappointed Jan
4 Sharpless as the chairwoman, so that would seem to be one
5 of the fixed items.

6 BOARD MEMBER BECKER: And, would it be
7 possible to get this subject on the agenda for that
8 meeting? Environmental tobacco smoke, for the March
9 meeting?

10 CHIEF LOCKETT: Well, I think it would be a
11 part of the agenda as a part of prioritization. Isn't
12 that on the agenda, Genevieve?

13 MS. SHIROMA: Well, the March Board meeting
14 is to discuss mainly the addition of the 189 federal
15 hazardous air pollutants to the list. And then also, as
16 we discussed with you last time, the revision of the
17 definitions. We weren't going to be singling out any
18 specific compounds at that time. It is really just the
19 general overall list update for the Board.

20 CHAIRMAN PITTS: Well, then maybe it is worth
21 writing the letter then.

22 BOARD MEMBER BECKER: I will make the
23 recommendation to the panel that we -- yes. What I think
24 would be reasonable is we will work on the wording of
25 this, and presumably Stan and I will then make sure that

1 it is the consensus of everyone. We will FAX it to you,
2 and then we would recommend that this be sent to Jan
3 Sharpless and Ken Kaiser, basically saying we'd like to
4 push environmental tobacco smoke into the 1803 process.

5 BOARD MEMBER GLANTZ: And, that would be sent
6 by the chair on behalf of the panel?

7 CHIEF LOCKETT: Right.

8 BOARD MEMBER GLANTZ: I'll second that.

9 CHAIRMAN PITTS: It has been moved and
10 seconded that we perform the following action.

11 Is there any further discussion?

12 [No Response.]

13 All in favor, raise their hands.

14 Opposed?

15 Then that is carried. The motion is carried.

16 I think, actually, that then concludes this
17 meeting.

18 Any other business?

19 [No Response.]

20 Do I hear a motion to adjourn?

21 BOARD MEMBER FROINES: So move.

22 CHAIRMAN PITTS: Seconded?

23 BOARD MEMBER GLANTZ: Second.

24 CHAIRMAN PITTS: Moved and seconded, the
25 meeting is adjourned.

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[Whereupon the meeting was concluded at 1:20 p.m.]

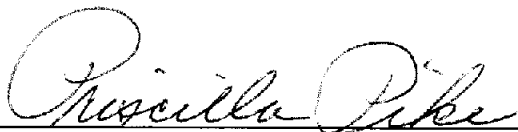
REPORTER'S CERTIFICATION

STATE OF CALIFORNIA)
) ss.
COUNTY OF MADERA)

I, PRISCILLA PIKE, an official Hearing Reporter and Notary Public for the State of California, do hereby certify that the foregoing pages 1 through 123 inclusive constitute a true and correct transcript of the matter as reported by me before the Scientific Review Panel at the said place and date.

I FURTHER CERTIFY that I have no interest in the subject matter.

WITNESS my hand this 16th day of March, 1991.



PRISCILLA PIKE
Oakhurst Court Reporting Services